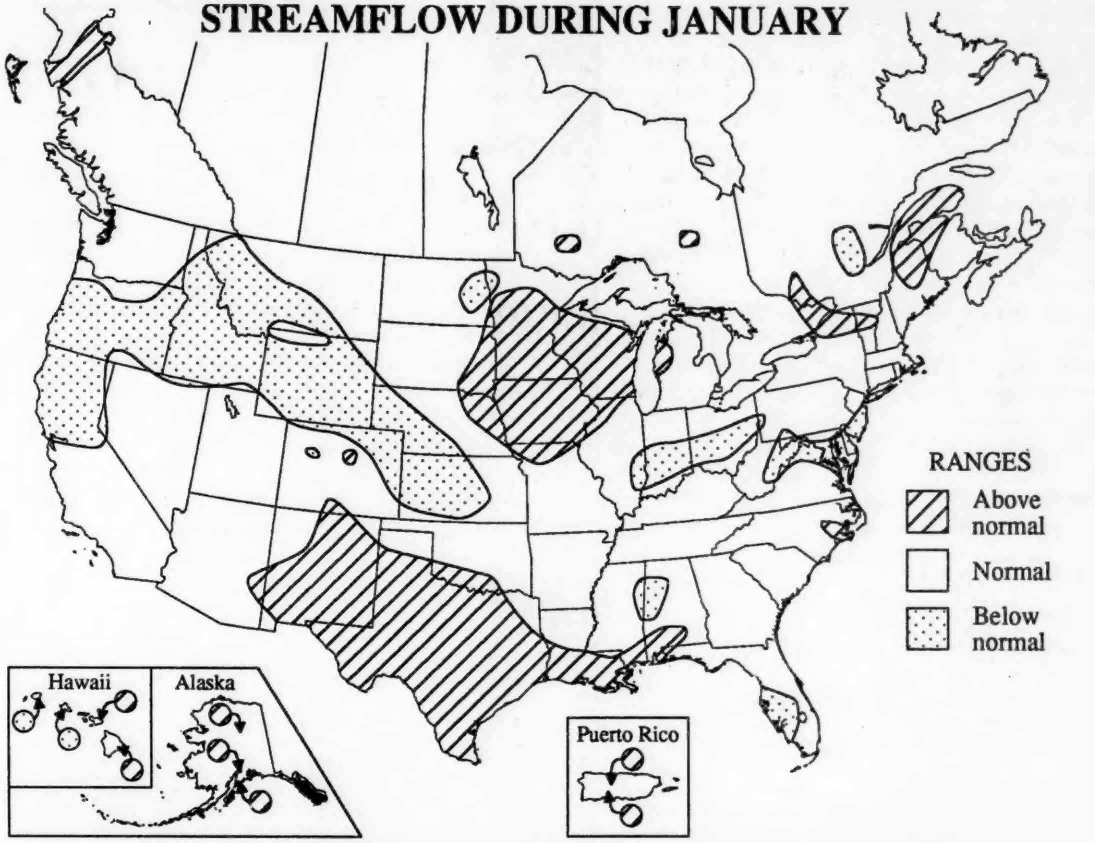
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

JANUARY 1992

STREAMFLOW DURING JANUARY



Severe floods, caused by intense rainfall of as much as 15 inches in some places, occurred in Puerto Rico January 5-6. There were 15 people killed and another 15 were missing. Damages were in the millions of dollars and some parts of the island were designated disaster areas. Flood peaks exceeded those of record and the 100-year flood at some stations.

Drought continued to affect parts of the United States, particularly New York, Ohio, Nevada, Washington, and California, the latter despite heavy precipitation in some parts of the State.

January streamflow declined from that for December at 107 index stations, remained unchanged at 6 index stations, and increased at 78 index stations, resulting in normal to above-normal range streamflow at 80 percent of the index stations. Below-normal range streamflow occurred in 16 percent of the area of the conterminous United States and southern Canada during January. Total January flow for the index stations in the conterminous United States and southern Canada was 19 percent below median, after a 10 percent decrease from last month.

The combined flow of the 3 largest rivers in the lower 48 States--Mississippi, St. Lawrence, and Columbia--averaged 4 percent below median and in the normal range, after an 18 percent decrease in flow from December to January.

Month-end index reservoir contents were in the below-average range at 28 of 100 reporting sites, compared with 29 of 100 at the end of December, and 33 of 100 at the end of January 1991 Contents were in the above-average range at 42 reservoirs, compared with 44 last month, and 50 a year ago.

Mean January elevations at four master gages on the Great Lakes (provisional National Ocean Service data) were in the normal range on all the lakes except Lake Ontario, which was in the below-normal range for the fifth consecutive month.

Utah's Great Salt Lake rose 0.20 foot, ending the month at 4,201.90 feet above National Geodetic Vertical Datum. Lake level was 0.50 foot lower than at the end of January 1991.

Streamflow increased from that for December in the Atlantic Slope and also the Florida and Gulf of Mexico basins, and decreased in the other 10 basins.

SURFACE-WATER CONDITIONS DURING JANUARY 1992

Severe floods occurred in Puerto Rico in early January, with floods of record and the 100-year flood exceeded at some streamflow stations. However, drought continued to affect some areas of the United States. In the East, the contents of the New York City Reservoir System increased, rising from 57 percent of capacity at the end of December to 60 percent of capacity at the end of January (only 65 percent of the long-term average for the end of January), almost 40 percent lower than contents at the end of January 1990. Drought is also affecting parts of Ohio, Washington, Oregon, Nevada, and California. (See page 5 for information on the first four States.) In California, total streamflow, reservoir contents, and ground-water levels remained well-below average. Total streamflow for January at the six reporting index stations in California was 69 percent below median despite a 24 percent increase from that for December. The persistence and severity of the drought in California is shown by the following: (1) since the end of August 1990 (the most recent month of above-median streamflow), the cumulative streamflow deficit at the six index stations has gone from about 68 percent of a median year of runoff to about 128 percent of a median year of runoff—about 60 percent of a median year of runoff was "lost" in the last 17 months; (2) the seasonal lows in combined storage for 6 large index reservoirs have generally declined steadily since 1986, bottoming out at 69, 53, 43, 45, and 33 percent of capacity, with combined storage currently at 31 percent of capacity. The current month's storage in these 6 large reservoirs rose less than 1 percent from that for December, but it did rise. (Conditions in California are also discussed on page 5.)

January streamflow decreased from that for December at 107 index stations, remained unchanged at 6 index stations, and increased at 78 index stations, resulting in normal to above-normal range streamflow at 80 percent of the 191 reporting index stations in the United States, southern Canada, and Puerto Rico during the month, compared with 77 percent of stations in those ranges during December, and 79 percent of stations in those ranges during January 1991. Below-normal range streamflow occurred in 16 percent of the area of the conterminous United States and southern Canada during January, compared with 17 percent during December, and 23 percent (revised) during January 1991. Total flow of 532,000 cubic feet per second (ft^3/s) during January for the 173 reporting index stations in the conterminous United States and southern Canada was 19 percent below median, after a 10 percent decrease from last month, and 39 percent less than flow during January 1991. (Data for the St. Johns River near Christmas, Florida, were not available.)

Three new maximums occurred at stations in Minnesota, Texas, and Puerto Rico (see table on page 6), compared with two minimums and seven maximums during December. Hydrographs for the 3 stations at which new extremes occurred, and also for 4 other stations (in Kansas, Texas, Iowa, and Minnesota) where near extremes occurred, are on page 7.

(Continued on page 6)

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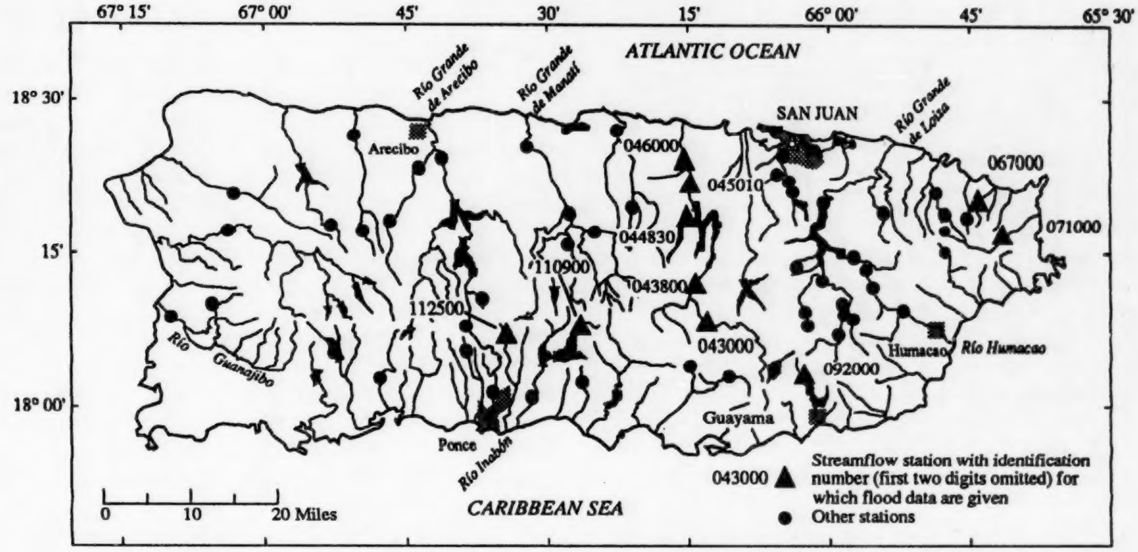
FLOODS OF JANUARY 5-6, 1992, ON PUERTO RICO



Intense rainfall of as much as 15 inches in some places caused severe flooding in Puerto Rico on January 5-6, 1992. Most of the rain fell between noon on the 5th and 6 a.m. on the 6th, with the heaviest amounts falling in the east-central part of the island near the drainage divide, causing flooding on both the north and south slopes.

The island's flood-alert system worked perfectly throughout the event and provided a vast amount of real time rainfall, streamflow, and meteorological data to the National Weather Service and local government agencies. Public flood warnings were issued by these agencies as early as 7 p.m. on the 5th, but most severe flooding occurred before midnight. January 6 is Three Kings Day in Puerto Rico and is celebrated much like Christmas in the United States. Consequently, most people were preoccupied with family gatherings and not giving full attention to the weather situation. In addition, many of the people who received timely warnings were reluctant to leave their homes because of holiday activities. The latest information was that 15 people are confirmed dead and another 15 are missing. Damages were in the millions of dollars and some parts of the island were designated disaster areas.

Two streamflow gages were destroyed and several were severely damaged. Peaks of record occurred at several gages. A complete and accurate assessment of flood peaks and recurrence intervals is not available due to the inaccessibility of many sites.

Provisional data; subject to revision

FLOOD DATA FOR SELECTED SITES IN PUERTO RICO, JANUARY 1992

				Maximum flood previously known			Maximum during present flood				
								Discharge			Recurrence
WRD Station number	Stream and place of determination	Drainage area (square miles)	Period of known floods	Date	Stage (feet)	Discharge (ft³/s)	Date	Stage (feet)	Ft³/s	Ft³/s per square mile	interval (years)
	RIO DE LA PLATA BASIN										
50043000	Rio de La Plata of Proyecto La Plata	63.0	1958-	Aug. 27, 1961	32.21	59,600	Jan 5	36.4	75,600	1,200	30
50043800	Rio de La Plata at Comerio	109	1988-	Sept. 18, 1989	17.36	32,000	5	29.2	127,700	1,165	(1)
50044830	Rio Guadiana of Guadiana	9.19	1991-	Feb. 6, 1991	11.54	4,600	5	13.36	6,640	723	(1)
50045010	Rio de La Plata below La Plata Dam	173	1989-	Sept. 18, 1989	22.98	48,800	5	34.76	127,000	734	(1)
50046000	Rio de La Plata at Highway 2 near Toa Alta	208	1928-	Sept. 13, 1928	[2,3]37.4	[2]120,000	5	26.39	110,000	529	25
	RIO SABANA BASIN										
50067000	Rio Sabana at Sabana	3.96	1980-	Apr. 21, 1980	19.35	9,010	5	19.74	9,570	2,417	15
	RIO FAJARDO BASIN										
50071000	Rio Fajardo near Fajardo	14.9	1960-	Sept. 18, 1989	[3]20.00	23,500	5	19.88	23,200	1,657	25
	RIO GRANDE DE PATILLAS BASIN										
50092000	Rio Grande de Patillas near Patillas	18.3	1959-	Sept. 16, 1975	12.45	14,800	5	26.0	71,000	3,880	[4]1.6
	RIO JACAGUAS BASIN										
50110900	Rio Toa Vaca above Lago Toa Vaca	7.64	1989-	Aug. 24, 1989	9.62	3,740	5	13.24	8,710	1,140	(1)
	RIO INABON BASIN										
50112500	Rio Inabon at Real Abajo	9.70	1964-	Oct. 7, 1985	[3]25.3	19,000	5	23.13	5,650	582	15

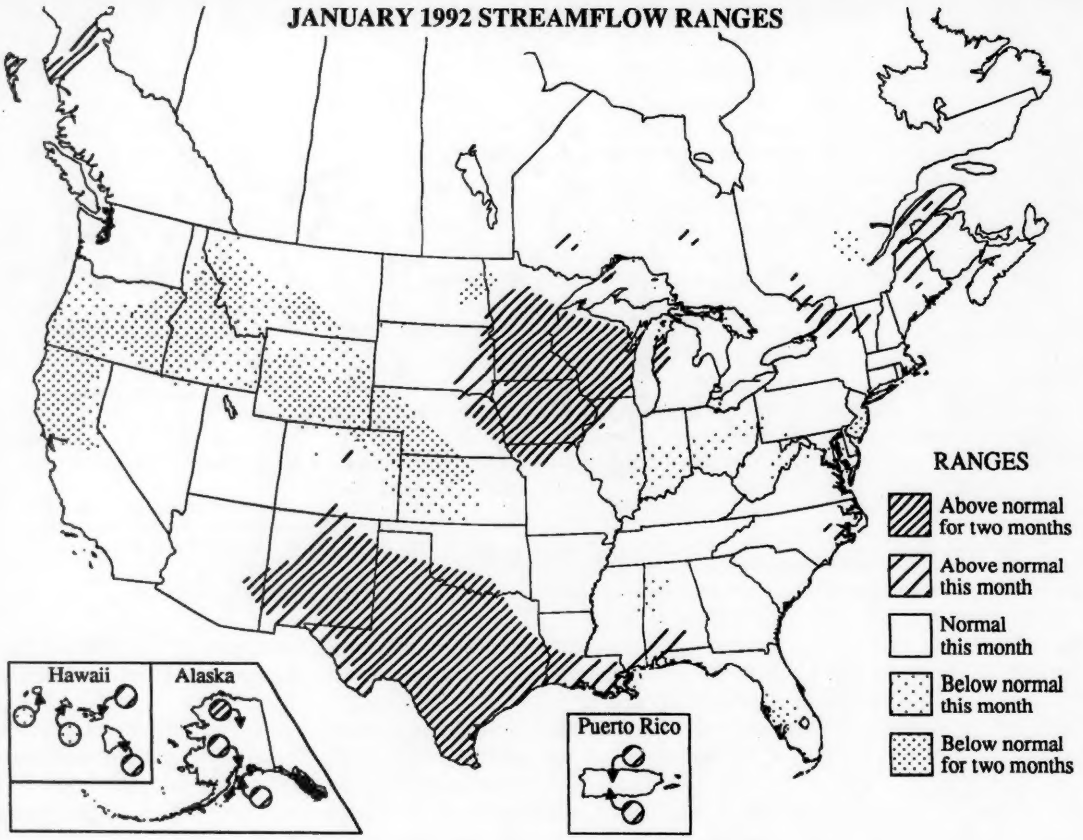
[1] Not determined.

[2] Based on information provided by local residents.

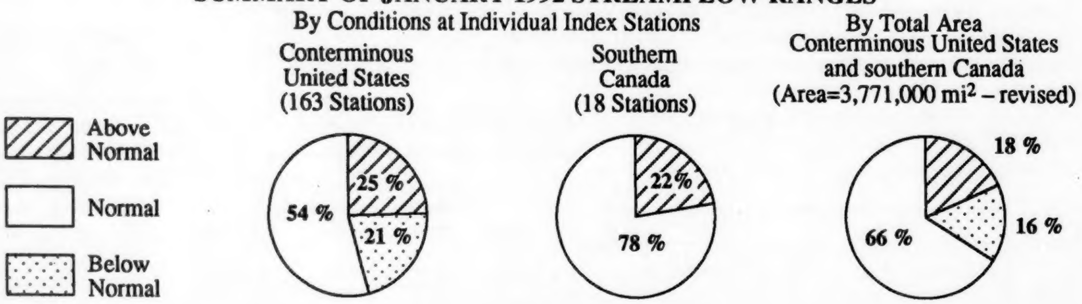
[3] *Datum then in use.*

[4] Recurrence interval greater than 100 years. Value shown is approximate ratio of discharge to that of the 100-year flood.

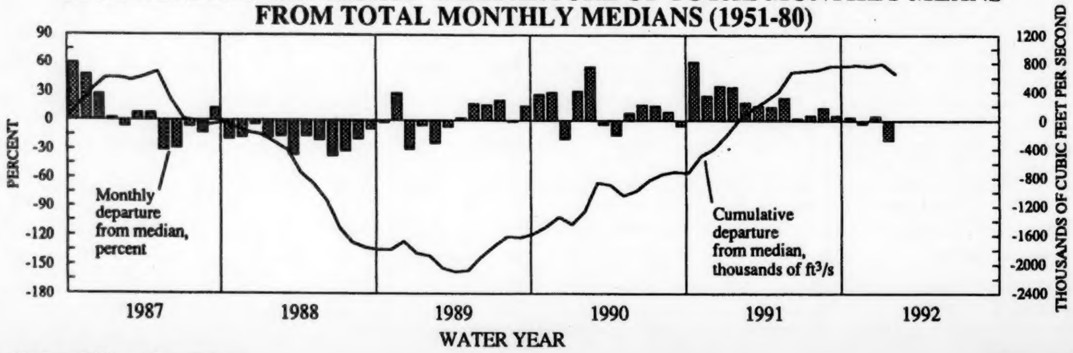
JANUARY 1992 STREAMFLOW RANGES



SUMMARY OF JANUARY 1992 STREAMFLOW RANGES



MONTHLY AND CUMULATIVE DEPARTURE OF TOTAL MONTHLY MEANS FROM TOTAL MONTHLY MEDIANS (1951-80)



DROUGHT CONDITIONS IN THE UNITED STATES

In **Ohio**, regional precipitation deficiencies for the 1991 calendar year range from 2.21 inches in the South Central region to 10.00 inches in the Central Hills region. Extreme drought is occurring in 3 of Ohio's 10 climatic regions. Ground-water levels have been declining since April in areas affected by the drought, and monthly record lows have occurred at several observation wells during the past 3 months. Flow of the Scioto River at Higby in south-central Ohio was 29 percent of median for January and has been in the below-normal range for 4 of the past 7 months. With the exception of parts of northwestern and southwestern Ohio where the drought is less severe, streamflow has been below normal for much of the past 6 months.

In **northern Nevada**, with more than half of the snow-accumulation season gone, snowpack water content in eastern Sierra Nevada watersheds ranges from 35 to 50 percent of average. Humboldt River snowpack is about two-thirds of average. Even average precipitation for the remainder of the season likely will mean that Lake Tahoe will remain below its rim for a record-setting (90 years of record) second consecutive full year, spring and summer streamflow will not exceed 50 percent of average, water-use restrictions in the Reno-Sparks area will become more stringent, and ground-water levels will be significantly affected in some western Nevada valleys.

Southeastern Washington continues to have lower-than-average snowpack and precipitation. The area east of the Columbia River and south of Spokane is in its sixth consecutive year of abnormally dry conditions. Water supply forecasts for the period April-July for the lower Snake River basin range from 40-70 percent of the long-term average. Irrigation storage in most small reservoirs in the area were only 10-20 percent of average February 1 contents. The prospect for refilling these reservoirs is dismal, and shortages in irrigation supplies are anticipated.

In **Oregon**, 18 of the State's 36 counties have been declared drought emergency areas. Reservoir storage, as of February 1, was critically low. Storage in the 27 principal irrigation reservoirs is 51 percent of normal which is 29 percent of capacity. There are 8 reservoirs which contain less than 25 percent of average stored water. Prospects for refill of reservoirs in eastern Oregon is unlikely and shortages in irrigation supplies are anticipated.

CALIFORNIA WATER CONDITIONS

(From *California Water Supply Outlook*, prepared and published by the California Department of Water Resources)

Statewide precipitation for January (normally our wettest month) was only 49 percent of average. January accounts for about 18 percent of our annual precipitation. The Northern Sierra received only 32 percent of average and was exceeded only slightly in the Central Sierra with 35 percent. The driest area in California was the North Lahontan with only about 10 percent of average precipitation and the wettest (only in percent of average) was the Colorado Desert area with about 130 percent. Statewide precipitation since October 1, 1991 is 59 percent of average.

The snowpack is lagging far behind normal with a statewide water content of only 45 percent of average. Although very low, this year's pack is much better than last year's which was only 20 percent of average at this time.

Statewide runoff this year is about 25 percent of average. Although very low, that is up about 10 percent above the corresponding period 1 year ago. The Sacramento River Index Forecast indicates that normal weather for the rest of the season would produce an Index runoff of 8.0 million acre-feet, or 43 percent of average. This would make the 1991-92 water year not only critical but the fourth driest of record.

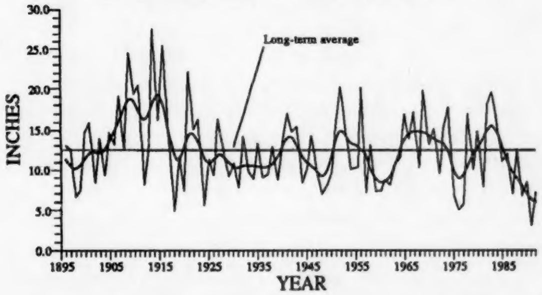
Storage in the State's 155 major reservoirs rose 439 thousand acre-feet (TAF) during January, up to a total of 13,106 TAF on February 1. In percent of average however, storage lost ground because during January average storage normally gains about 1,300 TAF. Statewide reservoir storage is 55 percent of average and 35 percent of capacity. The highest percent of average storage is in the South Coast Region (110 percent). The South Coast storage capacity is mainly used to regulate imported water.

During January, Folsom Lake's storage capacity was reduced from 1,010 TAF down to 974.5 TAF, a loss of 35.5 TAF as a result of a new capacity survey which adjusted to correct for 37 years of sediment accumulation.

CALIFORNIA PRECIPITATION

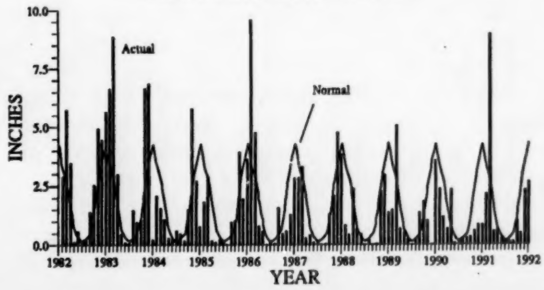
(From *Climate Variations Bulletin*, National Climatic Data Center, NOAA)

CALIFORNIA STATEWIDE PRECIPITATION
SEPTEMBER-JANUARY, 1895-96 TO 1991-92



The long-term California drought continues. California statewide precipitation for the five month period September through January, 1895-1991 is shown above. We see that the filter curve continued its trend into record deficit values, as has been the case for the last three years, but the actual yearly value was up somewhat from that of the same period last year. Looking at the deficit in precipitation from another perspective, the graph below shows the monthly California statewide precipitation for the period January 1982 through January 1992. Once again we see where the actual January 1992 value was considerably below the normal and was so for seven of the last twelve months.

CALIFORNIA STATEWIDE PRECIPITATION
JANUARY 1982-JANUARY 1992



NEW MAXIMUMS DURING JANUARY 1992 AT STREAMFLOW INDEX STATION

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous January maximums (period of record): Monthly mean in cfs (year)	Previous January maximums (period of record): Daily mean in cfs (year)	January 1992: Monthly mean in cfs	January 1992: Percent of median	January 1992: Daily mean in cfs	January 1992: Day
05280000	Crow River at Rockford, Minnesota	2,520	66	815 (1983)	1,080 (1983)	880	993	980	3
08167500	Guadalupe River near Spring Branch, Texas	1,315	69	1,683 (1968)	17,000 (1985)	1,833	1,145	3,960	27
50112500	Rio Inabon at Real Abajo, Puerto Rico	9.7	25	15.0 (1970)	46.0 (1970)	49.0	730	684	6

(Continued from page 2)

The combined flow of the 3 largest rivers in the lower 48 States—Mississippi, St. Lawrence, and Columbia—averaged 959,400 ft^3/s; 4 percent below median and in the normal range, after an 18 percent decrease in flow from December to January when flow was in the above-normal range. Flow of the St. Lawrence River was in the normal range for the eighth consecutive month. Flow of the Mississippi River was in the normal range after an above-normal range December. Flow of the Columbia River was in the below-normal range for the fifth consecutive month. Hydrographs for both the combined and individual flows of the "Big 3" are on page 8. Dissolved solids and water temperatures at four large river stations are also given on page 8. Flow data for the "Big 3" and 42 other large rivers are given in the Flow of Large Rivers table on page 9.

Month-end index reservoir contents were in the below-average range (below the month-end average for the period of record by more than 5 percent of normal maximum contents) at 28 of 100 reporting sites, compared with 29 of 100 at the end of December, and 33 of 100 at the end of January 1991, including most reservoirs in Maryland, Nebraska, North Dakota, Montana, Idaho, Utah, Nevada, and California. Contents were in the above-average range at 42 reservoirs (compared with 44 last month, and 50 a year ago), including most reservoirs in Nova Scotia, Maine, New Hampshire, Massachusetts, South Carolina, Georgia, Alabama, Wisconsin, Oklahoma, Texas, Arizona, and New Mexico. Reservoirs with contents in the below-average range and significantly lower than last year (with normal maximum contents of at least 1,000,000 acre-feet) are: the New York City Reservoir System, New York; Hungry Horse, Montana; Boise River, Idaho; and Clair Engle Lake and Shasta Lake, California. Two reservoirs had less than 10 percent of normal maximum contents (January average in parentheses): Lake Tahoe, California-Nevada, 0 percent (49); and Rye Patch, Nevada, 3 percent (49). Graphs of contents for seven reservoirs are shown on page 10 with contents for the 100 reporting reservoirs given on page 11. Maps on page 13 show reservoir storage conditions for January 1991 and January 1990 on the streamflow maps for those months.

Mean January elevations at four master gages on the Great Lakes (provisional National Ocean Service data) were in the normal range and above median on Lake Superior and Lake Erie, in the normal range and below median on Lake Huron, and in the below-normal range on Lake Ontario. Levels fell from those for December on Lake Superior and Lake Huron, and rose from those for December on Lake Erie and Lake Ontario. January levels ranged from 0.26 foot lower (Lake Superior) to 0.19 foot higher (Lake Ontario) than those for December. Monthly means have now been in the normal range for 4 months on Lake Superior, 20 months on Lake Huron, and 10 months on Lake Erie . Monthly means have been in the below-normal range on Lake Ontario for the last five months. January 1992 levels ranged from 1.62 foot lower (Lake Ontario) to 0.47 foot higher (Lake Superior) than those for January 1991. Stage hydrographs for the master gages on Lake Superior, Lake Huron, Lake Erie, and Lake Ontario are on page 12.

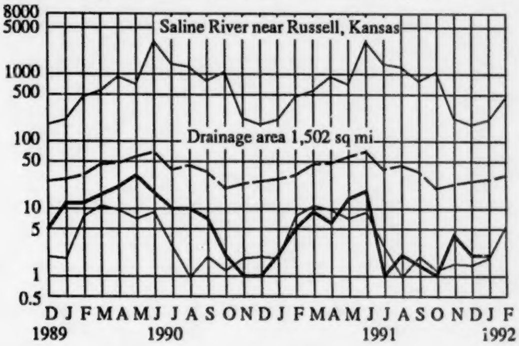
Utah's Great Salt Lake (graph on page 12) rose 0.20 foot January 1-31, ending the month at 4,201.90 feet above National Geodetic Vertical Datum. Lake level was 0.50 foot lower than at the end of January 1991, and 9.95 feet lower than the maximum of record which occurred in June 1986 and March-April 1987.

Maps on page 13 show streamflow conditions for January 1992 and January 1991. January 1992 has about 22 percent less area in the above-normal range, about 30 percent less area in the below-normal range, and about 22 percent more area in the normal range than January 1991. Below-normal range streamflow occurred during both months in parts of Hawaii, Oregon, California, Nevada, Utah, Idaho, Montana, Wyoming, Colorado, the Dakotas, Nebraska, Kansas, Minnesota, Alabama, and Florida. Above-normal range streamflow occurred during both months in parts of New Brunswick, Quebec, Vermont, New York, Michigan, Louisiana, Texas, Oklahoma, New Mexico, Colorado, Arizona, Alaska, and Puerto Rico. Both maps also show reservoir storage at all reporting index reservoir stations for comparison with streamflow.

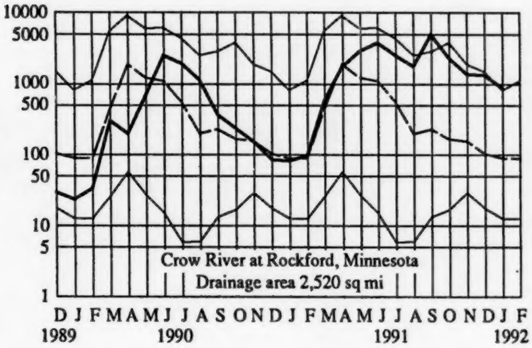
Graphs for 12 hydrologic areas show monthly percent departure of streamflow from median for the 1987-92 water years (page 14) and also compare monthly streamflow for the 1991 and 1992 water years with median monthly streamflow for 1951-80 (page 15). Streamflow increased from that for December in the Atlantic Slope and also the Florida and Gulf of Mexico basins, and decreased in the other 10 basins. Streamflow was below median in the Hudson Bay, Atlantic Slope, Ohio River, the Great and other closed, Pacific Slope, and Columbia River basins, and above median in the other 6 basins.

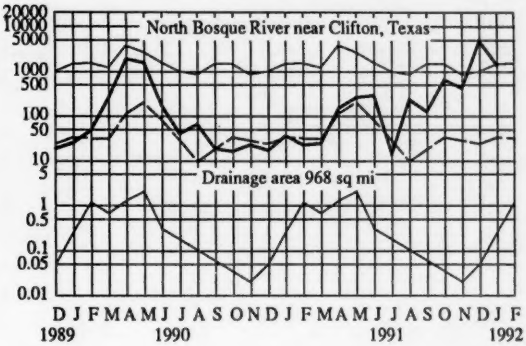
MONTHLY MEAN DISCHARGE OF SELECTED STREAMS

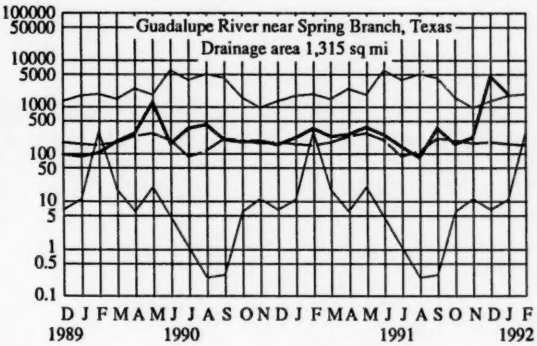
Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951-80. Heavy line indicates mean for current period.

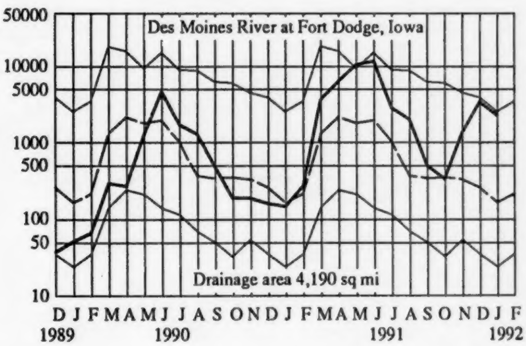


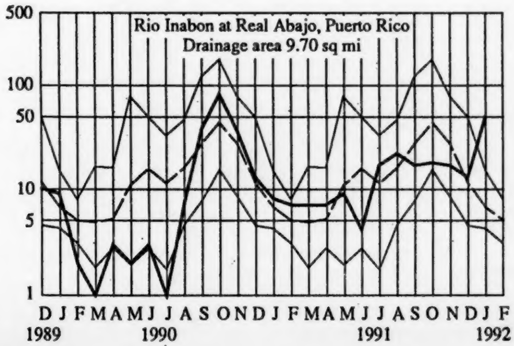
DISCHARGE IN CUBIC FEET PER SECOND

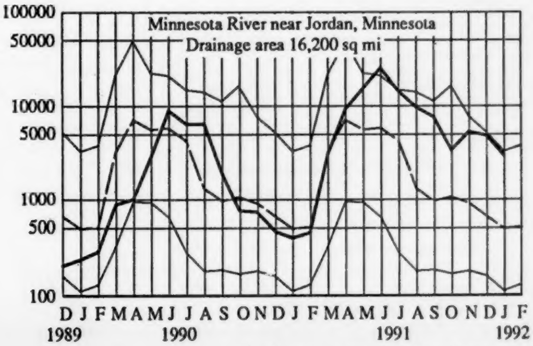






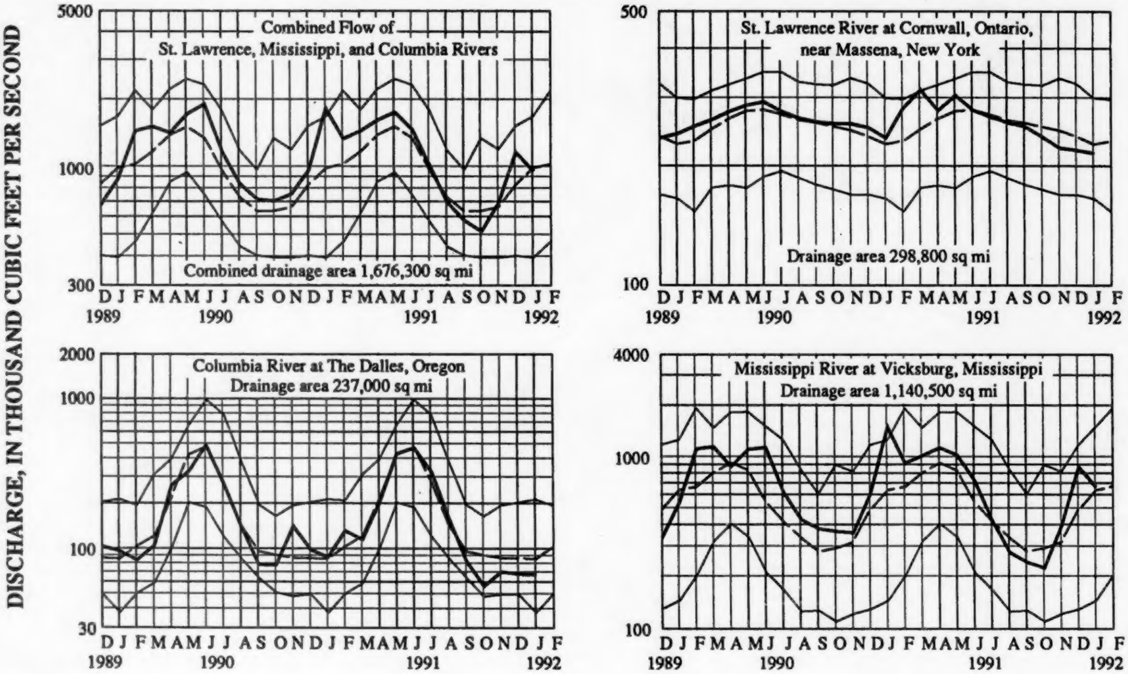






HYDROGRAPHS FOR THE "BIG THREE" RIVERS

Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951-80. Heavy line indicates mean for current period.



Provisional data; subject to revision

DISSOLVED SOLIDS AND WATER TEMPERATURES, FOR JANUARY 1992, AT DOWNSTREAM SITES ON FIVE LARGE RIVERS

Station number	Station name	January data of following calendar years	Stream discharge during month Mean (cfs)	Dissolved-solids concentration[1] Minimum (mg/L)	Dissolved-solids concentration[1] Maximum (mg/L)	Dissolved-solids discharge[1] Mean (tons per day)	Dissolved-solids discharge[1] Minimum (tons per day)	Dissolved-solids discharge[1] Maximum (tons per day)	Water temperature[2] Mean in °C	Water temperature[2] Minimum in °C	Water temperature[2] Maximum in °C
01463500	Delaware River at Trenton,	1992	7,516	91	112	2,088	1,552	3,476	2.5	0	5.5
	New Jersey, (Morrisville,	1945-91	12,490	62	201	[3]2,670	758	20,800	[3]1.5	0	7.5
	Pennsylvania)	(Extreme yr)		(1951, 1960)	(1959)		(1981)	(1976)			
			[4]10,440								
07289000	Mississippi River at	1992	674,400	209	230	400,300	275,300	468,500	6.5	5.0	7.5
	Vicksburg, Mississippi	1976-91	711,900	149	299	370,800	128,000	735,300	4.5	0	10.0
		(Extreme yr)		(1991)	(1981)		(1981)	(1991)			
			[4]645,700								
03612500	Ohio River at lock and dam 53,	1992	292,500	212	260	...	131,000	299,000	...	4.0	9.0
	near Grand Chain, Illinois,	1955-91	374,900	98	382	...	28,500	518,000	...	0	10.0
	(streamflow station at Metropolis,	(Extreme yr)		(1973)	(1964)		(1956)	(1991)			
	Illinois)		[4]362,300								
06934500	Missouri River at Hermann,	1992	38,900	295	429	39,300	31,300	45,400	5.0	2.0	9.0
	Missouri. (60 miles west of	1976-91	48,540	159	553	55,520	18,100	160,000	2.5	0	7.5
	St. Louis, Missouri)	(Extreme yr)		(1979)	(1977)		(1981)	(1985)			
			[4]33,290								
14128910	Columbia River at Warrendale,	1992	153,000	96	101	40,800	29,000	50,800	5.5	5.0	6.0
	Oregon (streamflow station at	1976-90	171,300	76	125	48,310	24,300	79,800	4.0	0	9.0
	The Dalles, Oregon)	(Extreme yr)		(1978)	(1983)		(1979)	(1984)			
			[4]86,480								

[1]Dissolved-solids concentrations, when not analyzed directly, are calculated on basis of measurements of specific conductance.
[2]To convert °C to °F: [(1.8 x °C) + 32] = °F.
[3]Mean for 8-year period (1983-91).
[4]Median of monthly values for 30-year reference period, water years 1951-80, for comparison with data for current month.

Provisional data; subject to revision

FLOW OF LARGE RIVERS DURING JANUARY 1992

Station number	Stream and place of determination	Drainage area (square miles)	Average discharge through September 1985 (cubic feet per second)	January 1992: Monthly mean discharge (cubic feet per second)	January 1992: Percent of median monthly discharge 1951–80	January 1992: Change in discharge from previous month (percent)	January 1992: Discharge near end of month: Cubic feet per second	January 1992: Discharge near end of month: Million gallons per day	January 1992: Discharge near end of month: Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,665	9,758	* 4,540	161	–1	4,000	2,600	31
01318500	Hudson River at Hadley, New York	1,664	2,908	2,100	120	–20	1,560	1,000	31
01357500	Mohawk River at Cohoes, New York	3,456	5,683	4,090	87	–26	2,780	1,800	31
01463500	Delaware River at Trenton, New Jersey	6,780	11,670	7,516	72	–21	8,090	5,230	31
01570500	Susquehanna River at Harrisburg, Pennsylvania	24,100	34,340	22,500	65	0	26,500	17,100	29
01646500	Potomac River near Washington, District of Columbia	11,560	[1]11,500	† [1]17,340	56	34	...	...	...
02105500	Cape Fear River at William O. Huske Lock, near Tarheel, North Carolina.	4,852	5,002	4,320	59	154	2,790	1,800	31
02131000	Pee Dee River at Peedee, South Carolina	8,830	9,871	7,592	54	57	8,320	5,380	31
02226000	Altamaha River at Doctortown, Georgia	13,600	13,730	13,910	85	212	24,100	15,600	31
02320500	Suwannee River at Branford, Florida	7,880	6,986	4,075	81	17	6,410	4,140	31
02358000	Apalachicola River at Chattahoochee, Florida	17,200	22,420	23,770	82	60	29,100	18,800	31
02467000	Tombigbee River at Demopolis lock and dam, near Coatopa, Alabama.	15,385	23,520	† 20,860	56	–48	21,400	13,800	31
02489500	Pearl River near Bogalusa, Louisiana	6,573	9,880	15,000	153	50	22,600	14,600	31
03049500	Allegheny River at Natrona, Pennsylvania	11,410	[1]19,580	[1]16,890	76	61	27,800	18,000	27
03085000	Monongahela River at Braddock, Pennsylvania	7,337	[1]12,480	[1]11,870	63	71	20,000	13,000	27
03193000	Kanawha River at Kanawha Falls, West Virginia	8,367	12,550	12,010	75	–34	9,400	6,080	30
03234500	Scioto River at Higby, Ohio	5,131	4,583	† 1,651	29	23	1,800	1,160	31
03294500	Ohio River at Louisville, Kentucky[2] #	91,170	115,800	133,200	88	–17	145,000	93,600	29
03377500	Wabash River at Mount Carmel, Illinois	28,635	27,660	† 13,820	54	–15	16,200	10,500	31
03469000	French Broad River below Douglas Dam, Tennessee[3] #	4,543	[1]6,739	[1]7,020	82	–23	...	...	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wisconsin.[2]	6,010	4,238	* 4,754	131	–30	3,830	2,470	31
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, New York.[4] #	298,800	243,900	217,000	95	–2	222,000	144,000	31
02NG001	St. Maurice River at Grand Mere, Quebec	16,300	24,910	† 5,630	25	–46	22,500	14,500	31
05082500	Red River of the North at Grand Forks, North Dakota	30,100	2,593	† 517	46	11	460	297	31
05133500	Rainy River at Manitou Rapids, Minnesota	19,400	12,920	9,000	93	0	9,600	6,200	27
05330000	Minnesota River near Jordan, Minnesota	16,200	3,680	* 2,936	604	–39	2,410	1,560	31
05331000	Mississippi River at St. Paul, Minnesota#	36,800	[1]11,020	* 9,535	197	–27	8,170	5,280	31
05365500	Chippewa River at Chippewa Falls, Wisconsin	5,650	5,149	* 4,417	148	–43	4,700	3,040	31
05407000	Wisconsin River at Muscoda, Wisconsin	10,400	8,710	* 8,958	148	–10	8,400	5,430	31
05446500	Rock River near Joslin, Illinois	9,549	6,080	* 7,240	198	–40	7,200	4,650	31
05474500	Mississippi River at Keokuk, Iowa#	119,000	63,790	* 66,510	193	–35	64,900	42,000	31
06214500	Yellowstone River at Billings, Montana	11,795	7,056	† 2,150	86	–19	2,430	1,570	31
06934500	Missouri River at Hermann, Missouri#	524,200	80,880	38,850	117	–14	37,300	24,100	31
07289000	Mississippi River at Vicksburg, Mississippi[5] #	1,140,500	584,000	674,400	104	–23	455,000	294,000	31
07331000	Washita River near Dickson, Oklahoma	7,202	1,402	* 3,227	912	–65	2,890	1,870	30
08276500	Rio Grande below Taos Junction Bridge, near Taos, New Mexico.	9,730	742	* 508	122	1	485	313	31
09315000	Green River at Green River, Utah	44,850	6,391	2,948	117	23	...	...	...
11425500	Sacramento River at Verona, California	21,251	19,430	† 10,040	36	24	...	...	...
13269000	Snake River at Weiser, Idaho	69,200	18,520	† 11,300	69	1	12,000	7,800	31
13317000	Salmon River at White Bird, Idaho	13,550	11,390	† 3,420	80	–8	3,640	2,350	31
13342500	Clearwater River at Spalding, Idaho	9,570	15,510	† 4,080	57	–21	8,770	5,670	31
14105700	Columbia River at The Dalles, Oregon[6] #	237,000	[1]193,500	† [1]68,040	79	–1	131,000	84,500	31
14191000	Willamette River at Salem, Oregon	7,280	[1]23,690	† [1]21,180	37	–42	28,200	18,200	31
15515500	Tanana River at Nenana, Alaska	25,600	23,810	* 8,365	129	7	8,100	5,240	31
08MF005	Fraser River at Hope, British Columbia	83,800	96,250	38,490	109	–3	52,300	33,800	30

#Indicates stations excluded from the combination bar/line graph. See Explanation of Data.

[1]Adjusted.

[2]Records furnished by Corps of Engineers.

[3]Records furnished by Tennessee Valley Authority.

[4]Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y., when adjusted for storage in Lake St. Lawrence.

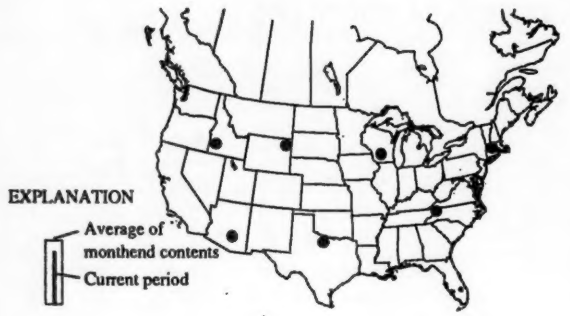
[5]Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.

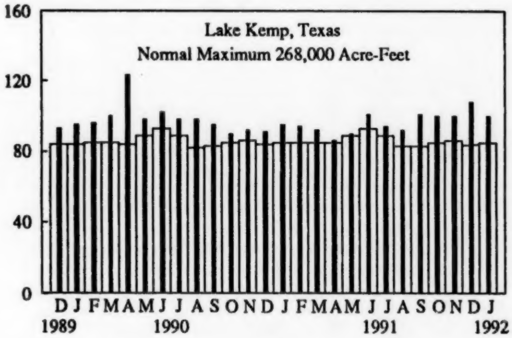
[6]Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

* Above-normal range

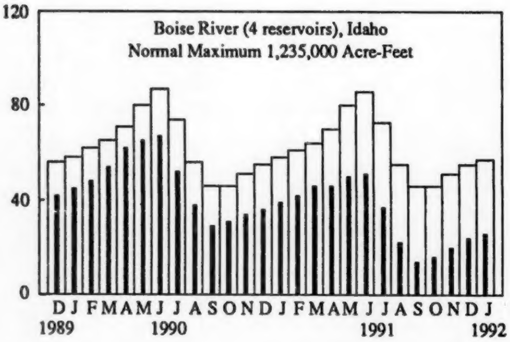
† Below-normal range

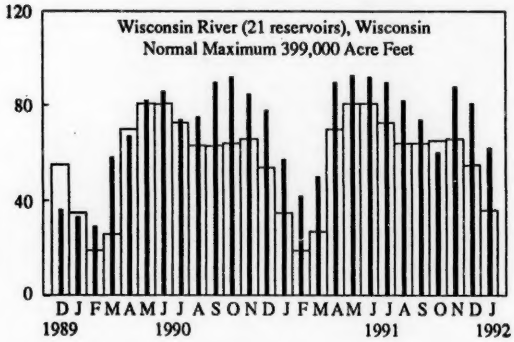
USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS

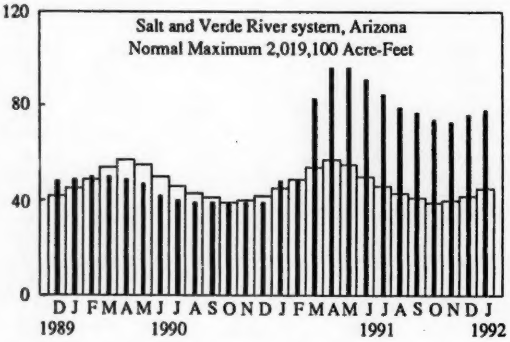


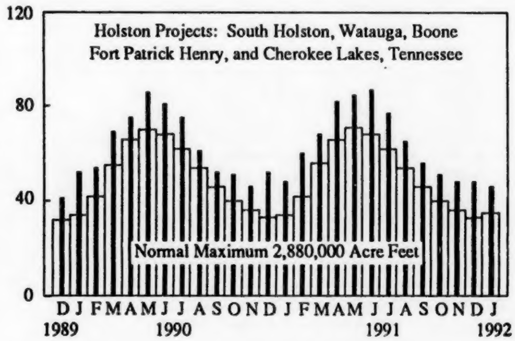


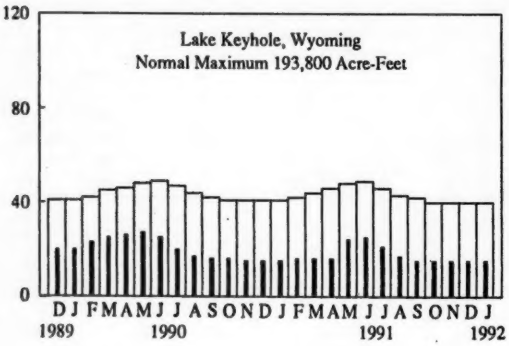
PERCENT OF NORMAL MAXIMUM

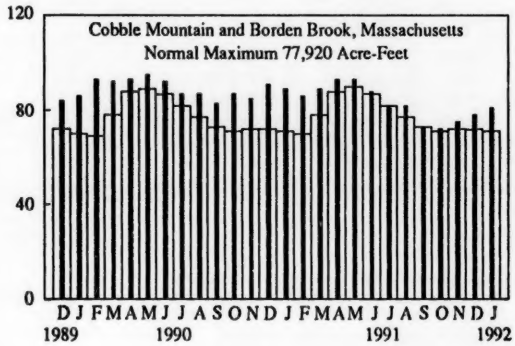












Provisional data; subject to revision

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS NEAR END OF JANUARY 1992

[Contents are expressed in percent of reservoir or reservoir system capacity. The usable capacity of reservoir or reservoir system is shown in the column headed "Normal maximum"]

Reservoir or reservoir system Principal uses: F-Flood control I-Irrigation M-Municipal P-Power R-Recreation W-Industrial	Percent of normal maximum End of January 1992	End of January 1991	Average for end of January	End of December 1991	Normal maximum (acre-feet)[1]
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	* 72	56	57	56	[2]226,300
QUEBEC					
Allard (P)	* 62	26	46	90	280,600
Gouin (P)	59	78	59	67	6,954,000
MAINE					
Seven Reservoir Systems (MP)	* 60	71	49	71	4,107,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	36	47	36	74	76,450
Lake Francis (FPR)	* 59	74	51	77	99,310
Lake Winnipesaukee (PR)	* 65	67	57	76	165,700
VERMONT					
Harriman (P)	52	56	47	68	116,200
Somerset (P)	* 75	71	59	83	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	* 81	89	71	78	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	* 51	71	45	57	786,700
Indian Lake (FMP)	59	66	54	58	103,300
New York City Reservoir System (MW)	† 60	93	82	57	1,680,000
NEW JERSEY					
Wanaque (M)	75	94	76	70	85,100
PENNSYLVANIA					
Allegheny (FPR)	29	32	30	28	1,180,000
Pymatuning (FMR)	† 70	94	83	67	188,000
Raystown Lake (FR)	58	67	58	60	761,900
Lake Wallenpaupack (PR)	* 64	58	53	62	157,800
MARYLAND					
Baltimore Municipal System (M)	† 68	98	85	70	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	* 86	93	80	91	288,800
Narrows (Badin Lake) (P)	92	92	95	91	128,900
High Rock Lake (P)	† 54	76	65	42	234,800
SOUTH CAROLINA					
Lake Murray (P)	* 79	82	67	76	1,614,000
Lakes Marion and Moultrie (P)	* 75	69	69	69	1,777,000
SOUTH CAROLINA-GEORGIA					
Strom Thurmond Lake (FP)	64	69	59	64	1,730,000
GEORGIA					
Burton (PR)	* 70	81	59	69	104,000
Sinclair (MPR)	* 91	100	84	88	214,000
Lake Sidney Lanier (FMPR)	53	47	52	50	1,686,000
ALABAMA					
Lake Martin (P)	* 75	75	69	72	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	40	43	35	43	2,293,000
Douglas Lake (FPR)	12	15	14	13	1,395,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	46	50	43	49	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	* 46	48	35	48	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	* 51	80	41	56	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	* 57	77	46	75	365,000
Wisconsin River (21 Reservoirs) (PR)	* 62	57	36	81	399,000
MINNESOTA					
Mississippi River Headwater System (FMR)	25	29	21	28	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	† 61	56	78	64	22,700,000
SOUTH DAKOTA					
Angostura (I)	74	43	70	73	130,770
Belle Fourche (I)	† 29	27	48	25	185,200
Lake Francis Case (FIP)	67	66	68	58	4,589,000
Lake Oahe (FIP)	63	56	66	61	22,240,000
Lake Sharpe (FIP)	100	100	99	102	1,697,000
Lewis and Clark Lake (FIP)	† 94	99	102	96	432,000
NEBRASKA					
Lake McConaughy (IP)	† 55	54	72	52	1,948,000
OKLAHOMA					
Eufaula (FPR)	* 97	97	87	120	2,378,000
Keystone (FPR)	84	84	86	107	661,000
Tenkiller Ferry (FPR)	* 103	104	92	114	628,200
Lake Altus (FIMR)	* 78	65	50	69	133,000
Lake O'The Cherokees (FPR)	* 88	96	80	94	1,492,000
OKLAHOMA-TEXAS					
Lake Texoma (FMPRW)	* 98	96	88	146	2,722,000
TEXAS					
Bridgeport (IMW)	* 97	87	49	103	386,400
Canyon (FMR)	* 113	94	81	150	385,600
International Amistad (FIMPW)	* 110	94	85	103	3,497,000
International Falcon (FIMPW)	* 106	66	73	105	2,668,000
Livingston (IMW)	* 106	99	90	106	1,788,000
Possum Kingdom (IMPRW)	95	93	93	91	570,200
Red Bluff (P)	* 39	23	31	38	307,000
Toledo Bend (P)	* 93	102	86	83	4,472,000
Twin Buttes (FIM)	* 47	52	35	44	177,800
Lake Kemp (IMW)	* 100	95	85	108	268,000
Lake Meredith (FMW)	39	32	36	38	796,900
Lake Travis (FIMPRW)	* 111	96	81	150	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	† 72	71	79	77	2,043,000
Fort Peck (FPR)	† 62	55	81	62	18,910,000
Hungry Horse (FIPR)	† 57	70	67	61	3,451,000
WASHINGTON					
Ross (PR)	59	63	54	74	1,052,000
Franklin D. Roosevelt Lake (IP)	* 102	89	82	94	5,022,000
Lake Chelan (PR)	† 36	74	44	48	676,100
Lake Cushman (PR)	* 90	68	78	74	359,500
Lake Merwin (P)	101	100	96	98	245,600
IDAHO					
Boise River (4 Reservoirs) (FIP)	† 26	39	57	24	1,235,000
Coeur d'Alene Lake (P)	44	57	48	35	238,500
Pend Oreille Lake (FP)	† 39	37	50	33	1,561,000
IDAHO-WYOMING					
Upper Snake River (8 Reservoirs) (MP)	64	50	64	57	4,401,000
WYOMING					
Boysen (FIP)	70	73	70	78	802,000
Buffalo Bill (IP)	58	40	63	59	421,300
Keyhole (F)	† 15	15	40	15	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	† 37	33	49	36	3,056,000
COLORADO					
John Martin (FIR)	† 12	12	20	8	364,400
Taylor Park (IR)	* 66	71	56	71	106,200
Colorado-Big Thompson Project (I)	53	48	57	54	730,300
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	† 61	65	71	63	31,620,000
UTAH-IDAHO					
Bear Lake (IPR)	† 32	34	57	32	1,421,000
CALIFORNIA					
Folsom (FIMPR)	† 34	15	52	36	1,000,000
Hetch Hetchy (MP)	37	10	32	46	360,400
Isabella (FIR)	† 15	8	26	15	568,100
Pine Flat (FIR)	† 10	4	48	8	1,001,000
Clair Engle Lake (Lewiston) (FP)	† 22	30	72	22	2,438,000
Lake Almanor (P)	* 69	66	52	66	1,036,000
Lake Berryessa (FIMRW)	† 34	36	80	33	1,600,000
Millerton Lake (FI)	† 45	37	63	38	503,200
Shasta Lake (FIPR)	† 30	36	69	29	4,377,000
CALIFORNIA-NEVADA					
Lake Tahoe (IMPRW)	† 0	0	49	0	744,600
NEVADA					
Rye Patch (I)	† 3	1	49	1	194,300
ARIZONA-NEVADA					
Lake Mead and Lake Mohave (FIMP)	76	77	71	75	27,970,000
ARIZONA					
San Carlos (IP)	* 57	18	26	47	935,100
Salt and Verde River System (IMPR)	* 78	48	45	76	2,019,100
NEW MEXICO					
Conchas (FIR)	* 93	60	78	91	315,700
Elephant Butte and Caballo (FIPR)	* 80	65	44	78	2,394,000

[1] 1 acre-foot = 0.04356 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second per day.

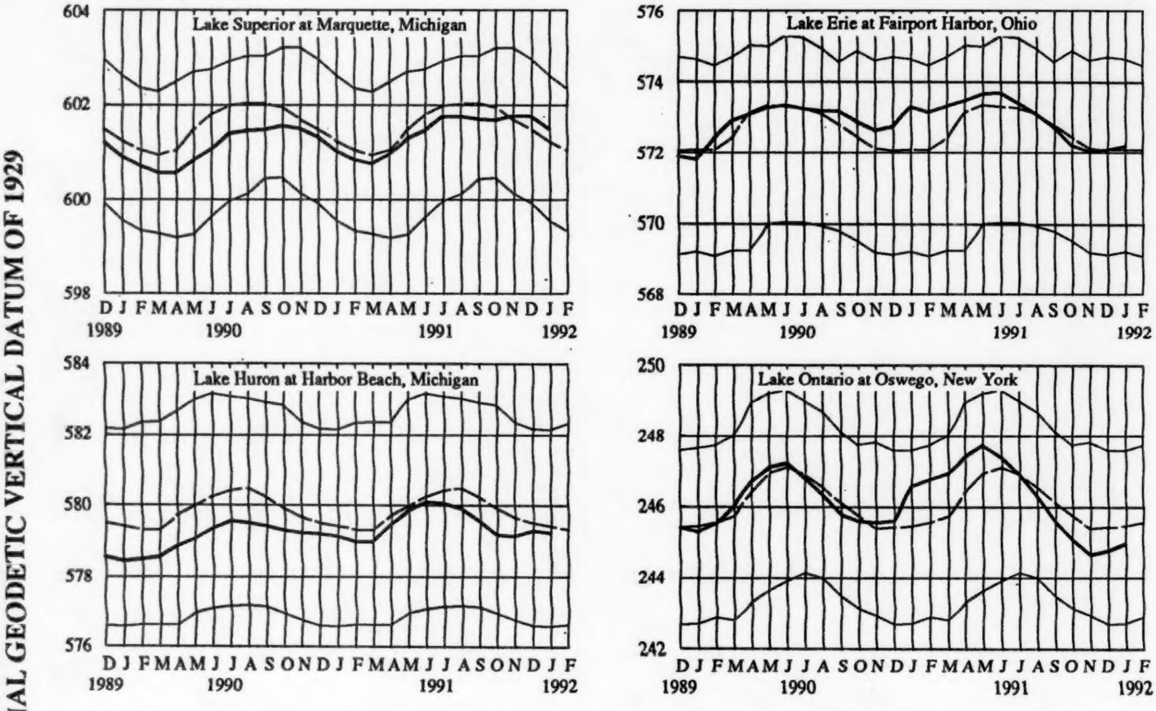
[2] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

* Above-average range

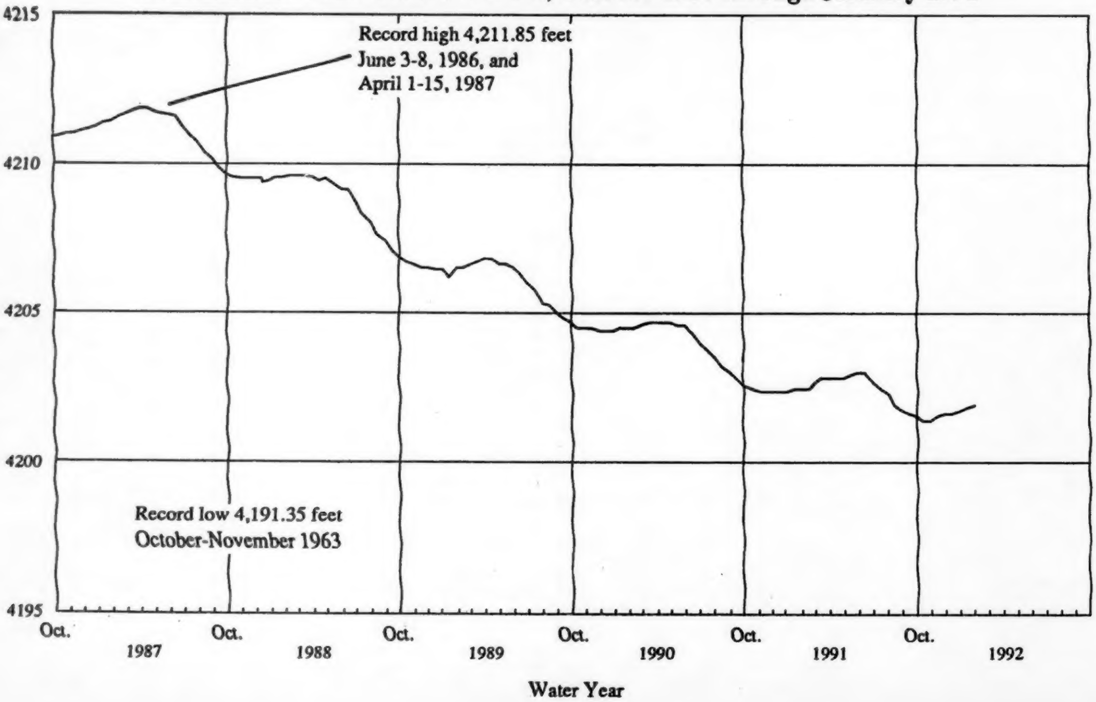
† Below-average range

GREAT LAKES ELEVATIONS

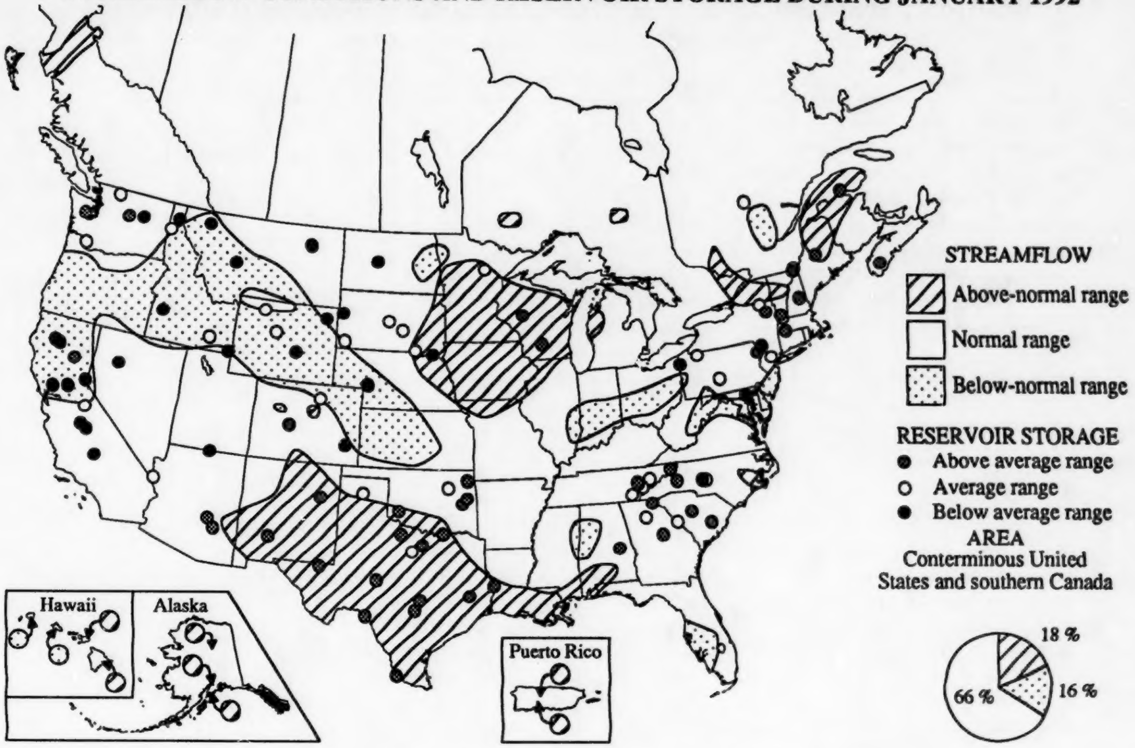
Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951-80. Heavy line indicates mean for current period. Data from National Ocean Service.



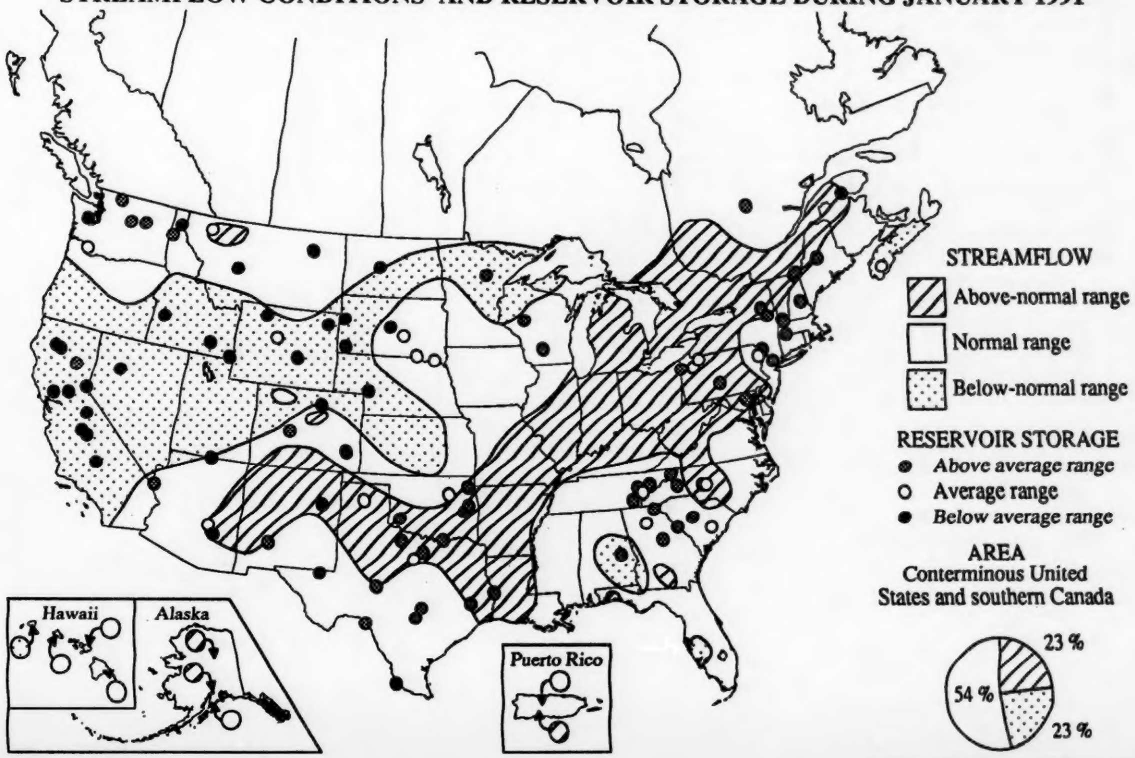
Fluctuations of the Great Salt Lake, October 1986 through January 1992



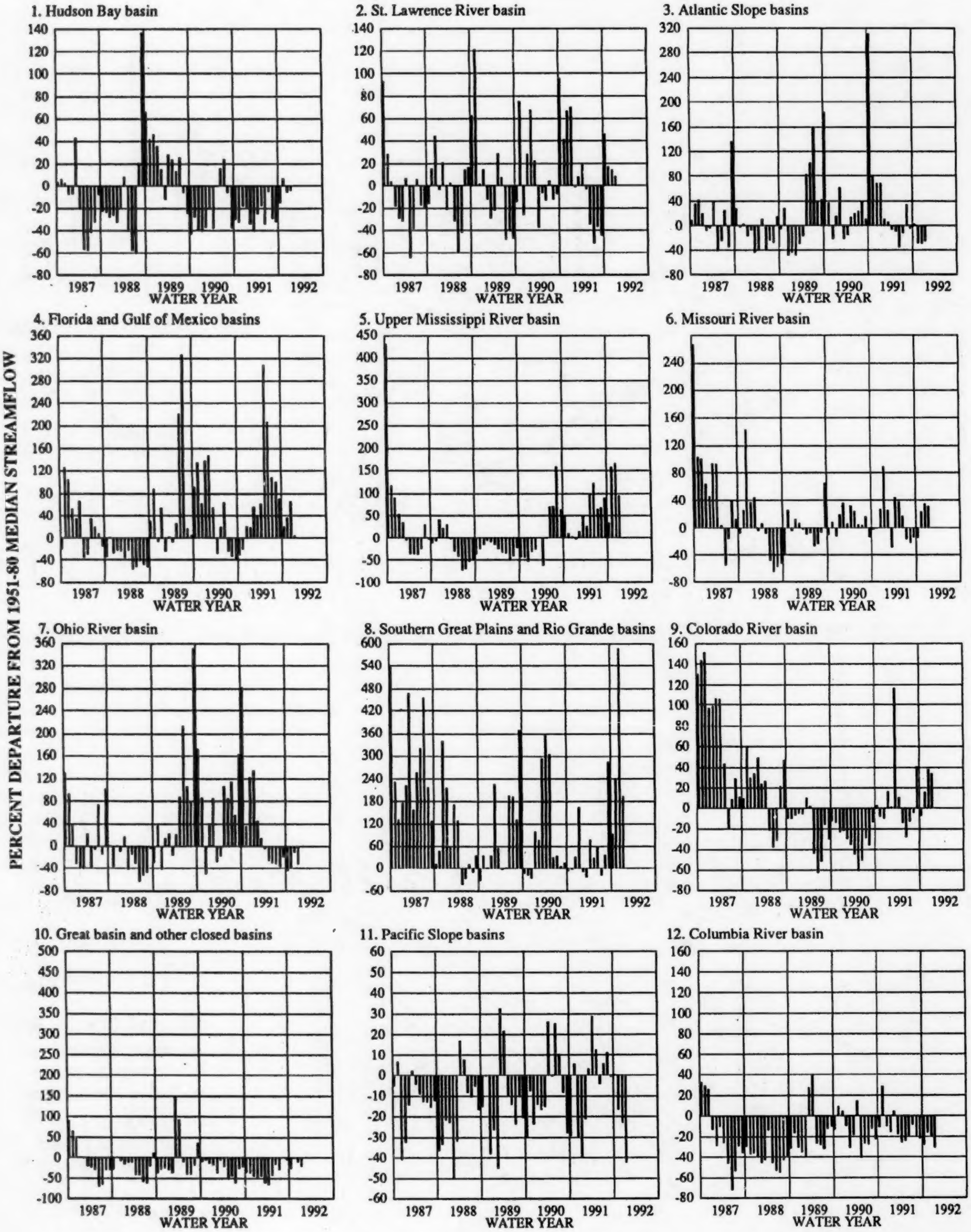
STREAMFLOW CONDITIONS AND RESERVOIR STORAGE DURING JANUARY 1992



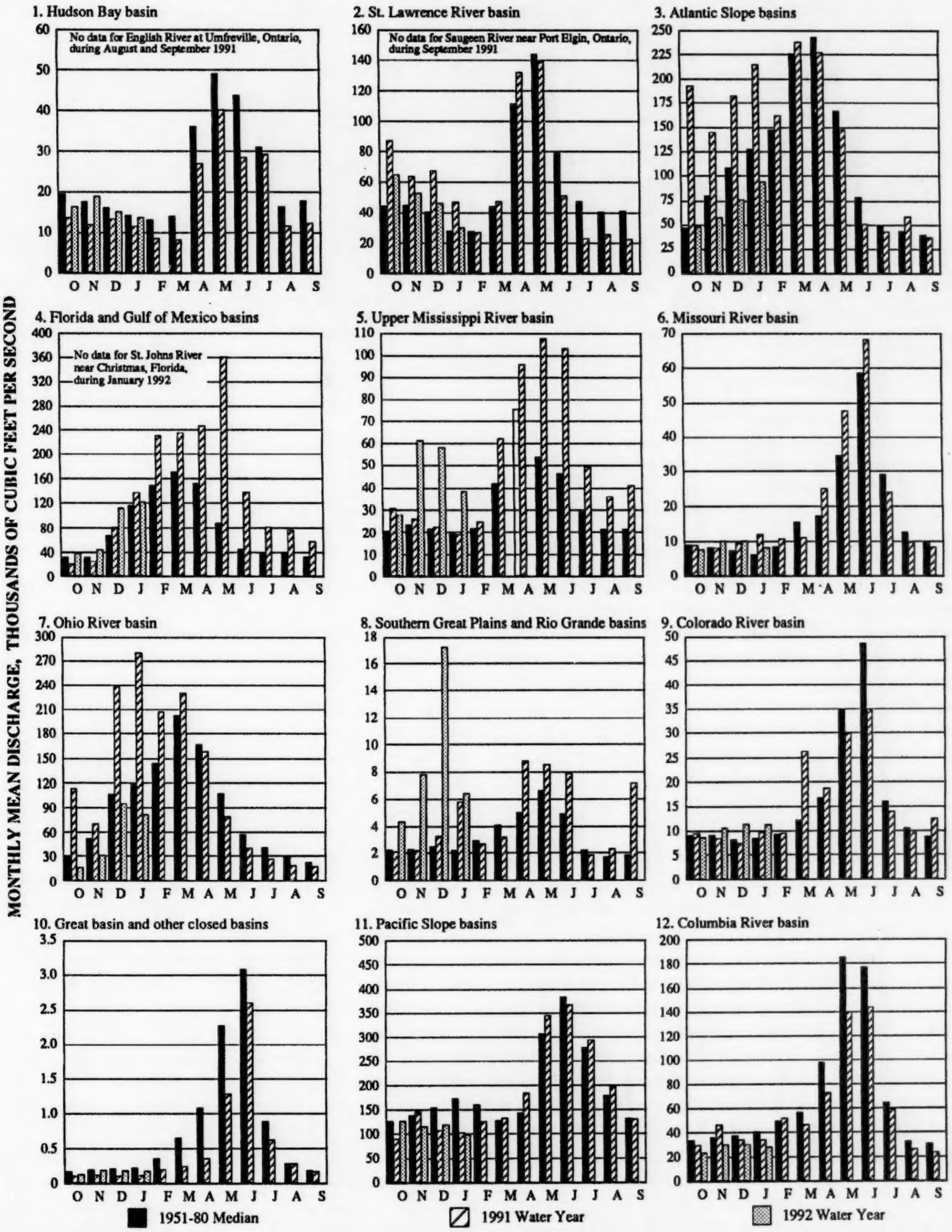
STREAMFLOW CONDITIONS AND RESERVOIR STORAGE DURING JANUARY 1991



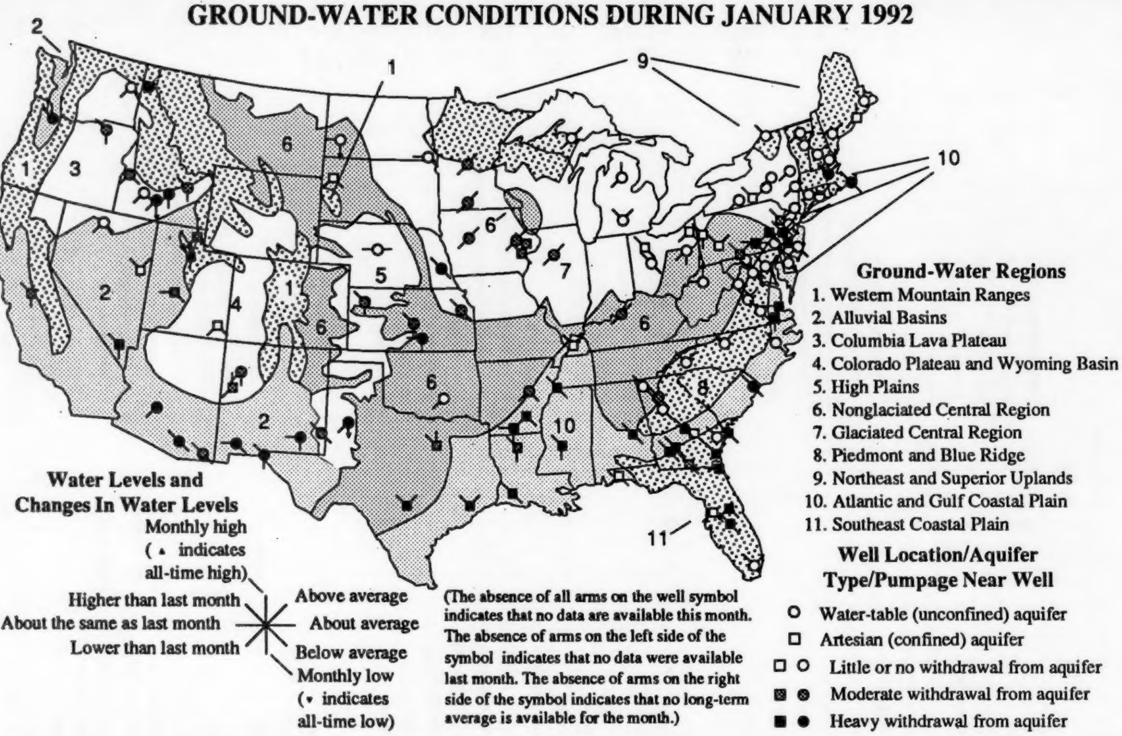
MONTHLY DEPARTURE OF ACTUAL STREAMFLOW (OCTOBER 1986-JANUARY 1992) FROM MEDIAN STREAMFLOW (1951-80)



ACTUAL MONTHLY STREAMFLOW, 1991 AND 1992 WATER YEARS, COMPARED WITH MEDIAN MONTHLY STREAMFLOW, 1951-80



GROUND-WATER CONDITIONS DURING JANUARY 1992



New extremes occurred at 36 ground-water index stations (see table on page 18) during January-27 lows (including 4 all-time) and 9 highs (including 2 all-time)—compared with 28 new extremes last month. Graphs showing water levels at seven stations for the past 26 months are on page 19. The graphs on page 19 are for wells in the Colorado Plateau and Wyoming Basin region in Utah, the Nonglaciated Central region in Kansas, the Glaciated Central region in Iowa and Michigan, the Atlantic and Gulf Coastal Plain region in Georgia and New Jersey, and the Piedmont and Blue Ridge region in Virginia.

Ground-water levels in the Western Mountain Ranges region were above last month's levels in Idaho, and below last month's in Washington. Levels were above long-term averages in Idaho, and below average in Washington.

In the Alluvial Basins region, ground-water levels were at or above last month's levels except in parts of Nevada and Utah. Levels were above long-term averages in Oregon and parts of Nevada and New Mexico, and below average elsewhere in the Region. January lows occurred in wells in California, Nevada, New Mexico, and Texas. Level rose to a January high in the well in Oregon. An all-time high occurred in a well in the Roswell Basin artesian aquifer at Roswell, New Mexico.

In the Columbia Lava Plateau region, ground-water levels were above last month's in Oregon, and mixed with respect to last month's levels in Idaho. Levels were below long-term averages throughout the Region. January low levels occurred in three wells in Idaho and one in Oregon, and an all-time low occurred in the well in the Snake River Plain aquifer near Eden, Idaho.

Ground-water levels in the Colorado Plateau and Wyoming Basin region were below last month's levels throughout the Region. Levels were below long-term average in Utah, and mixed with respect to average in New Mexico. A January low and a January high occurred in wells in New Mexico

In the High Plains region, ground-water levels were at or above last month's levels except in Texas. Levels were at or below long-term averages throughout the Region. A January low occurred in the well in Kansas, and an all-time low occurred in the Ogallala aquifer near Lubbock, Texas.

Ground-water levels in the Nonglaciated Central region were below last month's levels in South Dakota, Oklahoma, and Kentucky, mixed in Pennsylvania, and at or above last month's levels elsewhere. Levels were above long-term averages in Texas, Kentucky, and West Virginia, mixed in Pennsylvania, and below average elsewhere. January lows occurred in wells in Kansas (see graph page 19) and Pennsylvania, and an all-time low occurred in the Sentinel Butte aquifer near Dickinson, North Dakota. A monthly high occurred in a well in Texas, and an all-time high occurred in the well in West Virginia.

Ground-water levels in the Glaciated Central region were at or below last month's levels in North Dakota, Minnesota, and most of New York; mixed in Iowa, Illinois, Michigan, and Ohio, and above last month's levels in Nebraska, Kansas, and Pennsylvania. Levels were above long-term averages in wells

Provisional data; subject to revision

WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES–JANUARY 1992

GROUND–WATER REGION Aquifer and Location	Aquifer type and local aquifer pumpage	Depth of well in feet	Water level in feet below land–surface datum	Departure from average in feet	Net change in water level in feet since: Last month	Last year	Year records began	Remarks
WESTERN MOUNTAIN RANGES (1)								
Rathdrum Prairie aquifer near Athol, northern Idaho	●	485	456.1	5.3	3.8	6.2	1929	
ALLUVIAL BASINS (2)								
Alluvial valley fill aquifer in Steptoe Valley, Nevada	□	122	8.20	3.84	.19	–.30	1949	
Valley fill aquifer, Elfrida area near Douglas, Arizona	◉	124	101.93	–19.55	.58	–1.41	1947	
Hueco bolson aquifer at El Paso, Texas	●	640	271.26	20.68	.65	–.80	1964	Jan. low
COLUMBIA LAVA PLATEAU (3)								
Snake River Plain aquifer near Eden, Idaho	●	208	131.1	–11.3	–2.9	–4.5	1962	All–time low
Columbia River basalt aquifer, Pendleton, Oregon		1,501	220.41	–34.54	1.16	–2.36	1965	Jan. low
COLORADO PLATEAU AND WYOMING BASIN (4)								
Dakota aquifer near Blanding, Utah	□	140	50.22	–3.71	–.50	–2.89	1960	
HIGH PLAINS (5)								
Ogallala aquifer near Colby, Kansas	◉	175	130.59	–11.89	.39	–1.05	1947	Jan. low
Southern High Plains aquifer, Lovington, New Mexico	◉	212	59.20	–5.23	.12	.47	1971	
NONGLACIATED CENTRAL REGION (6)								
Sentinel Butte aquifer near Dickinson, North Dakota	○	160	21.75	–3.27	–.01	–.56	1968	All–time low
Sand and gravel Pleistocene aquifer near Valley Center, Kansas	●	54	21.08	–3.44	.02	–.88	1937	Jan. low
Glacial outwash sand and gravel aquifer near Louisville, Kentucky	◉	94	17.86	6.82	–.20	–.11	1945	
Upper Pennsylvanian aquifer in the Central Appalachians Plateau near Glenville, West Virginia	○	25	12.44	3.83	.06	2.81	1953	All–time high
GLACIATED CENTRAL REGION (7)								
Fluvial sand and gravel aquifer, Platte River Valley, near Ashland, Nebraska	●	12	6.94	–1.04	.76	.38	1933	
Sheyenne Delta aquifer near Wyndmere, North Dakota	○	40	8.39	–1.64	–.01	.57	1963	
Pleistocene (glacial drift) aquifer at Princeton in northern Illinois	◉	29	6.00	5.70	–.10	.35	1942	
Shallow drift aquifer near Roscommon in north–central part of Lower Peninsula, Michigan	○	14	3.79	1.11	–.43	1.01	1934	Jan. high
Silurian–Devonian carbonate aquifer near Dola, Ohio	□	51	10.67	–2.16	1.39	–4.50	1954	
PIEDMONT AND BLUE RIDGE (8)								
Water–table aquifer in Petersburg Granite, southeastern Piedmont, Colonial Heights, Virginia	○	100	16.82	–1.67	.80	–3.03	1939	
Weathered granite aquifer, western Piedmont, Mocksville area, North Carolina	○	31	16.58	1.13	.30	–2.18	1981	
Surficial aquifer at Griffin, Georgia	○	30	18.11	–2.54	1.52	1.32	1943	
NORTHEAST AND SUPERIOR UPLANDS (9)								
Pleistocene glacial outwash aquifer, at Camp Ripley, near Little Falls, Minnesota	◉	59	15.00	1.7	–.83	.33	1949	
Glacial outwash sand aquifer at Oxford, Maine	○	39	8.56	.78	–.02	–.11	1980	
Shallow sand aquifer (glacial deposits), Acton, Massachusetts	●	34	18.48	.57	.15	.01	1965	
Pleistocene sand aquifer near Morrisville, Vermont	○	50	18.82	–.31	–.14	–.88	1966	
ATLANTIC AND GULF COASTAL PLAIN (10)								
Columbia deposits aquifer near Camden, Delaware	○	11	8.67	–1.81	.04	–2.05	1950	
Memphis sand aquifer near Memphis, Tennessee	■	384	106.40	–15.34	.23	1.14	1940	
Eutaw aquifer in the City of Montgomery, Alabama	■	270	22.8	–1.6	3.0	2.5	1952	
Evangeline aquifer at Houston, Texas	■	1,152	290.61	8.28	4.72	17.11	1978	
SOUTHEAST COASTAL PLAIN (11)								
Upper Floridan aquifer on Cockspur Island, Savannah area, Georgia	■	348	32.71	–5.34	1.09	.20	1956	
Upper Floridan aquifer, Jacksonville, Florida	■	905	–23.0	–5.7	0	2.6	1930	
Biscayne aquifer near Homestead, Florida	○	20	6.35	.87	1.12	1.63	1932	

in Minnesota and Michigan; mixed with respect to average in Iowa, Illinois, and Pennsylvania; and below average elsewhere. January highs occurred in wells in Michigan (see graph on page 19) and Pennsylvania. January lows occurred in wells in Iowa, Illinois, Ohio, and Pennsylvania.

Ground-water levels in the Piedmont and Blue Ridge region were at or above last month's levels throughout the Region. Levels were below long-term averages in New Jersey, Maryland, and Georgia; above long-term averages in North Carolina; and mixed in Pennsylvania and Virginia.

In the Northeast and Superior Uplands region, levels were above last month's levels in Massachusetts and New York; below last month's levels in Minnesota, Michigan, and Connecticut; and mixed in Maine, New Hampshire, and Vermont. Levels were at or above long-term averages throughout the Region. January high levels occurred in two wells in Maine.

Provisional data; subject to revision

NEW EXTREMES DURING JANUARY AT GROUND–WATER INDEX STATIONS

WRD Station Identification Number	GROUND–WATER REGION Aquifer and Location	Aquifer type and local aquifer pumpage	Depth of well	Years of record	End–of–month water level in feet below land surface datum: Previous January Record: Average	Previous January Record: Extreme (year)	January 1992
	LOW WATER LEVELS						
	ALLUVIAL BASINS						
315212106245101	Hueco bolson aquifer at El Paso, Texas	●	640	27	250.58	270.46 (1991)	271.26
324340104231701	Roswell Basin shallow aquifer at Dayton, New Mexico	●	250	40	91.74	122.72 (1991)	123.23
361611115151301	Valley–fill aquifer near Las Vegas, Neveda	■	905	45	30.19	91.07 (1991)	91.89
382444121123301	Mehrten aquifer near Wilton, California	▩	300	5	131.80	135.68 (1991)	137.67
403803111505301	Basin fill aquifer near Holladay, Utah	■	165	12	62.51	77.65 (1991)	79.20
	COLUMBIA LAVA PLATEAU						
423659114111601	Snake River Plain aquifer near Eden, Idaho	●	208	29	119.8	127.7 (1982)	[1]131.1
424953113412801	Snake River Plain aquifer near Rupert, Idaho	●	194	41	150.6	159.0 (1991)	161.1
432700112470801	Snake River Plain aquifer near Atomic City, Idaho	◍	636	42	584.6	587.7 (1982)	587.8
453934118491701	Columbia River basalts aquifer at Pendleton, Oregon	◍	1,501	22	185.87	218.05 (1991)	220.41
	COLORADO PLATEAU AND WYOMING BASIN						
352023107473201	Westwater Canyon aquifer near Grants–Bluewater, New Mexico	◍	155	36	72.12	78.10 (1991)	79.51
	HIGH PLAINS						
341010102240801	Ogallala aquifer near Lubbock, Texas	●	202	40	56.00	91.11 (1991)	[1]93.18
392329101040201	Ogallala aquifer near Colby, Kansas	◍	175	44	118.70	129.54 (1991)	130.59
	NONGLACIATED CENTRAL REGION						
375039097234201	Sand and gravel Pleistocene aquifer near Valley Center, Kansas	●	54	54	17.64	20.51 (1957)	21.08
375810097324301	Equus aquifer near Halstead, Kansas	◍	57	52	22.59	36.05 (1991)	39.91
404140077354001	Carbonate aquifer at Roseann, Pennsylvania	▩	200	8	55.24	62.82 (1990)	76.20
465755102410701	Sentinel Butte aquifer near Dickinson, North Dakota	○	160	22	18.48	21.19 (1991)	[1]21.75
	GLACIATED CENTRAL REGION						
403207081293800	Glacial–drift aquifer near Dover, Ohio	○	62	31	8.88	12.25 (1988)	12.92
410538080280801	Sandstone and shale aquifer at Pulaski State Game Land 150 near Pulaski, Pennsylvania	○	105	24	16.04	17.66 (1977)	18.07
415534091251502	Cambrian–Ordovician aquifer at Mt. Vernon, Iowa	▩	1,557	4	337.00	338.68 (1991)	341.57
422803087475302	Lower Mount Simon aquifer at Illinois Beach State Park, Illinois	■	2,264	3	201.50	204.48 (1991)	205.71
	ATLANTIC AND GULF COASTAL PLAIN						
321945090152201	Sparta aquifer system at Jackson, Mississippi	■	852	47	249.17	307.59 (1991)	308.56
322357092341701	Sparta aquifer near Ruston, Louisiana	◍	703	17	223.61	236.92 (1991)	237.35
331438092411901	Sparta aquifer near El Dorado, Arkansas	■	540	36	328.32	352.31 (1991)	370.82
344607091543401	Mississippi Valley alluvial aquifer near Lonoke, Arkansas	●	135	16	106.24	113.95 (1989)	118.50
364059076544901	Middle Potomac aquifer at Franklin, Virginia	●	305	31	169.27	208.97 (1991)	211.07
372506076511703	Upper Potomac aquifer near Toano, Virginia	■	401	5	159.02	162.11 (1991)	[1]163.75
395524074502501	Upper aquifer, Potomac–Raritan–Magothy system near Medford, New Jersey	■	410	23	112.51	134.23 (1990)	134.44
	HIGH WATER LEVELS						
	ALLUVIAL BASINS						
332615104303601	Roswell Basin artesian aquifer at Roswell, New Mexico	■	324	25	52.59	38.40 (1991)	[2]34.50
452938122254801	Troutdale aquifer near Portland, Oregon	●	715	28	96.90	88.65 (1991)	87.47
	COLORADO PLATEAU AND WYOMING BASIN						
351651107594501	San Andres–Yeso aquifer at Bluewater, New Mexico	▩	505	45	111.36	99.21 (1947)	99.15
	NONGLACIATED CENTRAL REGION						
324842097102901	Twin Mountains (Trinity) aquifer near Hurst/Fort Worth, Texas	◍	667	13	457.68	445.88 (1984)	443.30
385604080495901	Upper Pennsylvanian aquifer near Glenville, West Virginia	○	25	38	16.27	13.58 (1958)	[2]12.44
	GLACIATED CENTRAL REGION						
410940074583401	Sandstone aquifer at Pocono Mountain Lakes Estates, Pennsylvania	▩	799	10	37.45	32.69 (1982)	28.48
442722084350701	Shallow drift aquifer near Roscommon, Michigan	○	14	57	4.90	3.85 (1973)	3.79
	NORTHEAST AND SUPERIOR UPLANDS						
441440068182701	Bedrock aquifer at Acadia National Park near Southwest Harbor, Maine	□	175	10	9.26	8.60 (1991)	8.28
445227067520101	Glacial sand and gravel aquifer at Hadley Lakes, Maine	○	30	6	5.08	4.53 (1991)	4.13

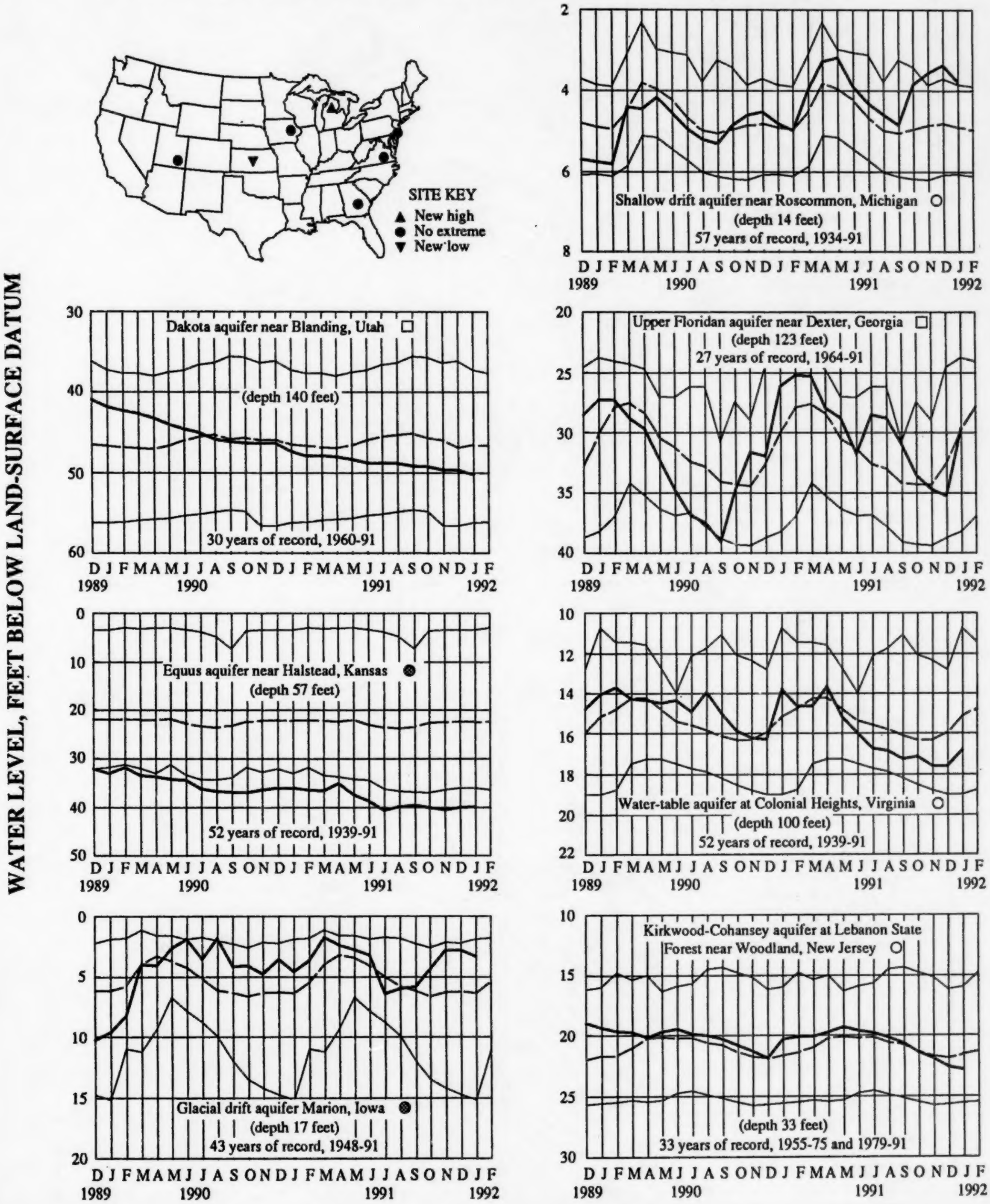
[1] All–time month–end low. [2]All–time month–end high

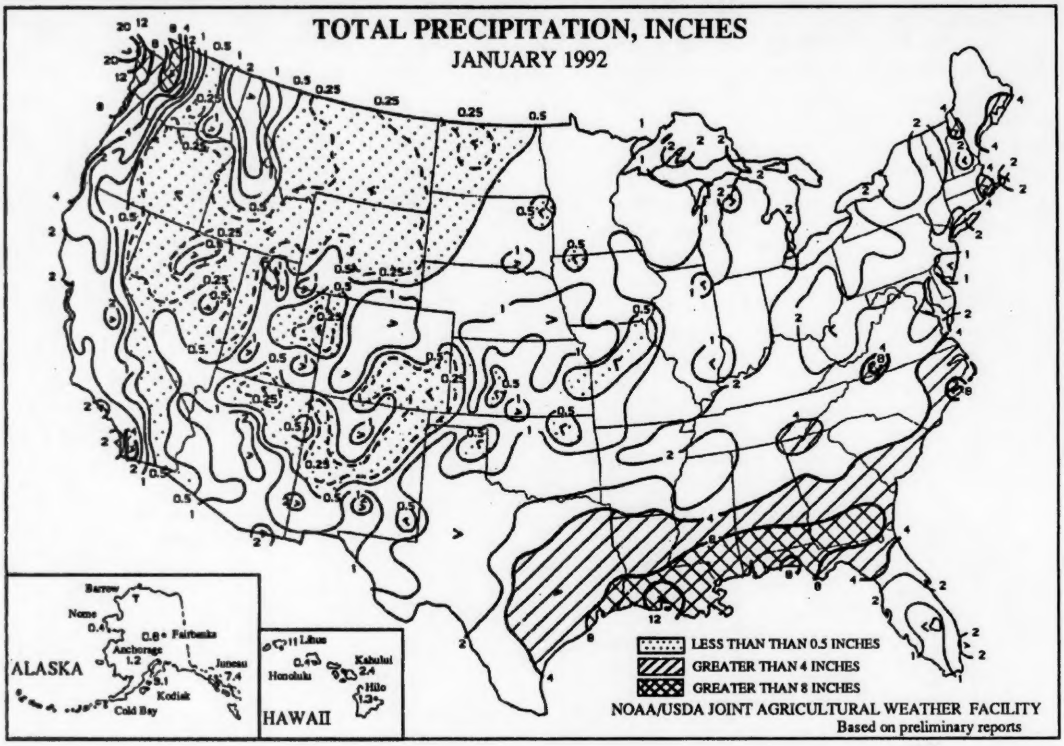
In the Atlantic and Gulf Coastal Plain region, water levels were at or below last month's in Delaware, Virginia, Florida, and Arkansas; mixed in New Jersey; and above last month's levels elsewhere. Ground-water levels were above long-term averages in Kentucky and Texas; mixed in Georgia; and below average elsewhere. January lows occurred in wells in New Jersey, Virginia, Mississippi, Arkansas, and Louisiana. An all-time low occurred in a well in the Upper Potomac aquifer near Toano, Virginia.

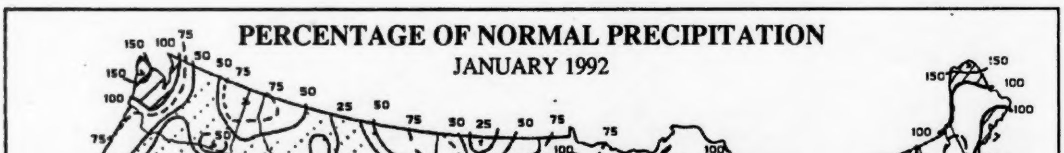
In the Southeast Coastal Plain region, water levels were generally above last month's levels in Georgia and mixed with respect to last month's levels in Florida. Levels were mixed with respect to long-term average throughout the Region.

MONTHEND GROUND-WATER LEVELS IN SELECTED WELLS

Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.







(From *Weekly Weather and Crop Bulletin* prepared and published by the NOAA/USDA Joint Agricultural Weather Facility)

UNITED STATES JANUARY PRECIPITATION IN HISTORICAL PERSPECTIVE

Areally-averaged precipitation for the nation was just below normal for January (first graph below), ranking January 1992 as the 38th driest (61st wettest) January on record. The preliminary value for precipitation is estimated to be accurate to within 0.15 inches: the confidence interval is plotted as a '+' in the first graph below. About one-seventh (14.2 percent) of the country experienced much wetter than normal conditions and 12.6 percent was much drier than normal.

Historical precipitation is shown in a different way in the second graph below. The January precipitation for each climate division in the contiguous U.S. was first standardized using the gamma distribution over the 1951-80 period. These gamma-standardized values were then weighted by area and averaged to determine a national standardized precipitation value. Negative values are dry, positive are wetter than the mean. This index gives a more accurate indication of how precipitation across the country compares to the local normal climate. The areally-weighted mean standardized national precipitation ranked 1992 as the 33rd driest (66th wettest) January on record.

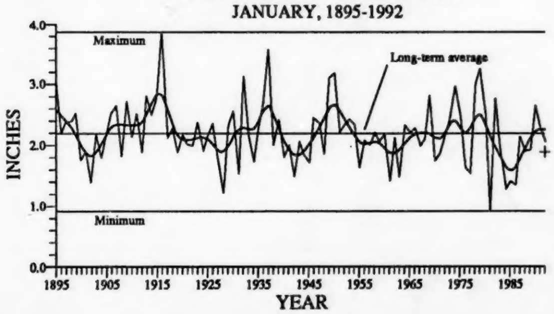
For the nation, the winter season, thus far, shows areally-averaged precipitation just slightly above normal (third graph below). When the local normal climate is taken into account, however, winter 1991-92, to date, ranks as the 43rd wettest such season on record (fourth graph below) thus putting it right at the normal.

Long-term drought conditions on a national scale increased slightly during January. The percent area of the contiguous U.S. experiencing long-term drought (as defined by the Palmer Drought Index) is currently about nine percent. At the same time, the percent area experiencing long-term wet conditions changed very little and continues to hover around 15 percent.

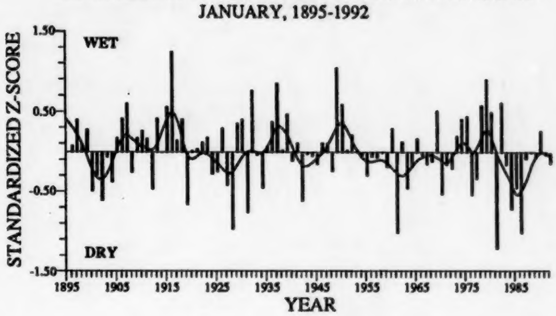
Nearly seventeen percent of the nation suffered from below normal precipitation for the December-January period while about 16 percent experienced much above normal precipitation. Four states (Idaho, Montana, Nevada, and Oregon) had their seventh driest or drier December-January period on record. Toward the other extreme, Oklahoma had the seventh wettest such period on record and New Mexico and Texas each recorded their wettest winter period to date.

Precipitation data for the Northern Great Plains (consisting of the Dakotas, Minnesota, the eastern three-fourths of Montana, and northeastern Wyoming) shows that both the filter curve and the actual values (last graph below) have been on a downturn for the last three years.

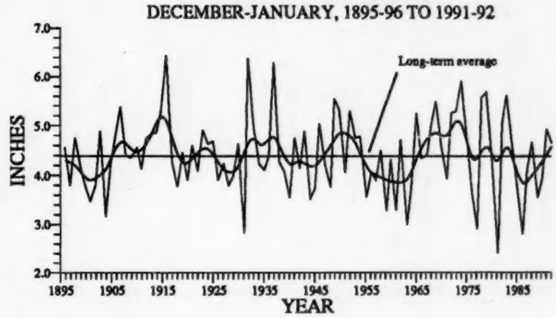
U.S. NATIONAL PRECIPITATION
JANUARY, 1895-1992



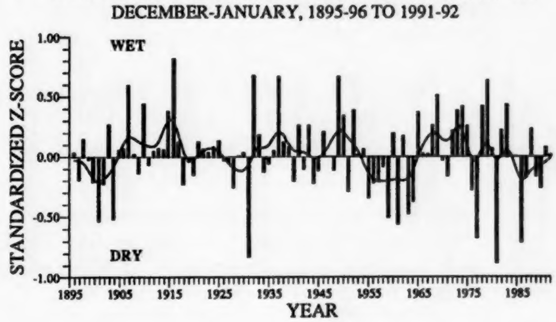
U.S. NATIONAL WEIGHTED MEAN PRECIPITATION INDEX
JANUARY, 1895-1992



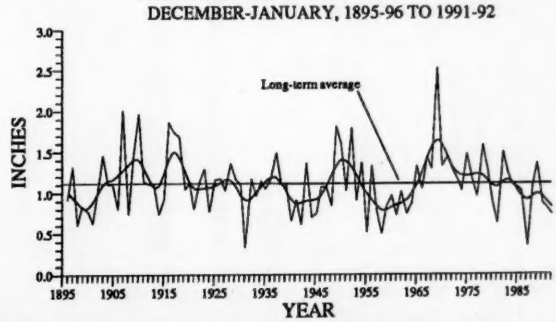
U.S. NATIONAL PRECIPITATION
DECEMBER-JANUARY, 1895-96 TO 1991-92



U.S. NATIONAL WEIGHTED MEAN PRECIPITATION INDEX
DECEMBER-JANUARY, 1895-96 TO 1991-92

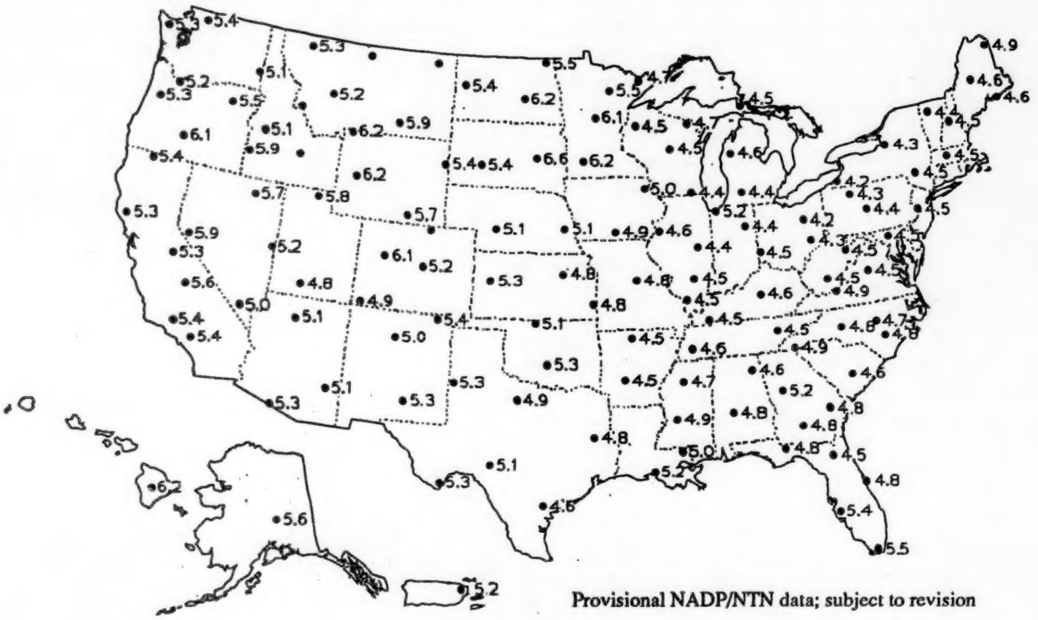


NORTHERN GREAT PLAINS PRECIPITATION
DECEMBER-JANUARY, 1895-96 TO 1991-92



(From *Climate Variations Bulletin*, National Climatic Data Center, NOAA)

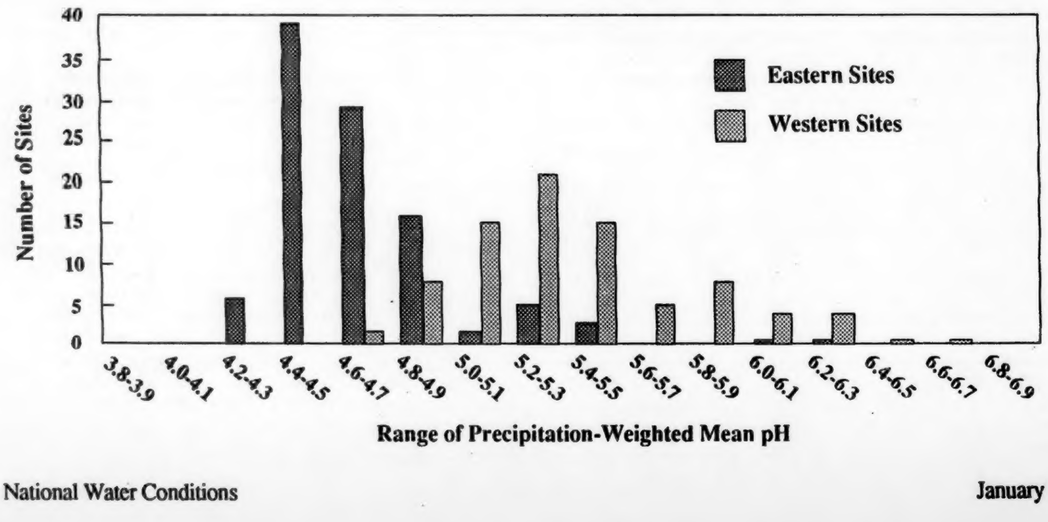
pH of Precipitation for December 23, 1991-January 26, 1992



Current pH data shown on the map (• 4.9) are precipitation-weighted means calculated from preliminary laboratory results provided by the NADP/NTN Central Analytical Laboratory at the Illinois State Water Survey and are subject to change. The 128 points (•) *shown on this map represent a subset of all sites chosen to provide relatively even geographic* spacing. Absence of a pH value at a site indicates either that there was no precipitation or that data for the site did not meet preliminary screening criteria for this provisional report.

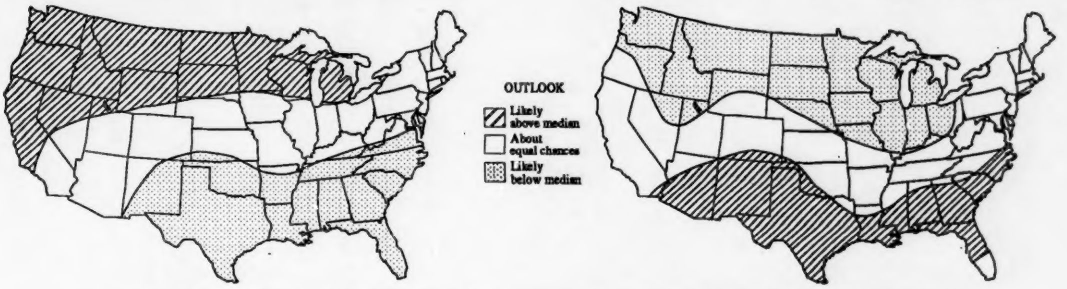
A list of the approximately 200 sites comprising the total Network and additional data for the sites are available from the NADP/NTN Coordination Office, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, CO 80523.

Distribution of precipitation-weighted mean pH for all NADP/NTN sites having one or more weekly samples for December 23, 1991-January 26, 1992. The East/West dividing line is at the western borders of Minnesota, Iowa, Missouri, Arkansas, and Louisiana.



TEMPERATURE OUTLOOK FOR FEBRUARY-APRIL 1992

PRECIPITATION OUTLOOK FOR FEBRUARY-APRIL 1992



From *Monthly and Seasonal Weather Outlook* prepared and published by the National Weather Service

NATIONAL WATER CONDITIONS

JANUARY 1992

Based on reports from the Canadian and U.S. Field offices; completed March 3, 1992

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EXPLANATION OF DATA (Revised December 1990)

Cover map shows generalized pattern of streamflow for the month based on provisional data from 186 index gaging stations—18 in Canada, 166 in the United States, and 2 in the Commonwealth of Puerto Rico. Alaska, Hawaii, and Puerto Rico inset maps show streamflow only at the index gaging stations that are located near the point shown by the arrows. Classifications on map are based on comparison of streamflow for the current month at each index station with the flow for the same month in the 30-year reference period, 1951-80. Shorter reference periods are used for one Canadian index station, two Kansas index stations, and the Puerto Rico index stations because of the limited records available.

The ***streamflow ranges map*** shows where streamflow has persisted in the above- or below-normal range from last month to this month and also where streamflow is in the above- or below-normal range this month after being in a different range last month. Three ***pie charts*** show: the percent of stations reporting discharges in each flow range for both the conterminous United States and southern Canada, and also the percent of area in each flow range for the conterminous United States and southern Canada. The ***combination bar/line graph*** shows the percent departure of the total mean from the total median flow (1951-80) and the cumulative departure from median (in cfs) for all reporting stations (excluding eight large river stations indicated by # in the ***Flow of large rivers*** table) in the conterminous United States and southern Canada.

The comparative data are obtained by ranking the 30 flows for each month of the reference period in order of decreasing magnitude—the highest flow is given a ranking of 1 and the lowest flow is given a ranking of 30. Quartiles (25-percent points) are computed by averaging the 7th and 8th highest flows (upper quartile), 15th and 16th highest flows (middle quartile and median), and the 23rd and 24th highest flows (lower quartile). The upper and lower quartiles set off the highest and lowest 25 percent of flows, respectively, for the reference period. The median (middle quartile) is the middle value by definition. For the reference period, 50 percent of the flows are greater than the median, 50 percent are less than the median, 50 percent are between the upper and lower quartiles (in the normal range), 25 percent are greater than the upper quartile (above normal), and 25 percent are less than the lower quartile (below normal). Flow for the current month is then classified as: in the ***above-normal range*** if it is greater than the upper quartile, in the ***normal range*** if it is between the upper and lower quartiles, and in the ***below-normal range*** if it is less than the lower quartile. Change in flow from the previous month to the current month is classified as ***seasonal*** if the change is in the same direction as the change in the median. If the change is in the opposite direction of the change in the median, the change is classified as ***contraseasonal*** (opposite to the seasonal change). For example: at a particular index station, the January median is greater than the December median; if flow for the current January increased from December (the previous month), the increase is seasonal; if flow for the current January decreased from December, the decrease is contraseasonal.

Flood frequency analyses define the relation of flood peak magnitude to probability of occurrence or recurrence interval. ***Probability of occurrence*** is the chance that a given flood magnitude will be exceeded in any one year. ***Recurrence interval*** is the reciprocal of probability of occurrence and is the average number of years between occurrences. For example, a flood having a probability of occurrence of 0.01 (1 percent) has a recurrence interval of 100 years. ***Recurrence intervals imply no regularity of occurrence***; a 100-year flood might be exceeded in consecutive years or it might not be exceeded in a 100-year period.

Statements about ***ground-water levels*** refer to conditions near the end of the month. The water level in each observation well is compared with average level for the end of the month determined from the entire period of record for that well. ***Changes in ground-water levels***, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data are given for five stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). ***Dissolved solids*** are minerals dissolved in water and usually consist predominately of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. ***Dissolved-solids discharge*** represents the total daily amount of dissolved minerals carried by the stream. ***Dissolved-solids concentrations*** are generally higher during periods of low streamflow, but the highest dissolved-solids discharges occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at times of low flow.

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